



HISTORY OF THE  
SECOND WORLD WAR

*Civil  
Defence*

By

T. H. O'BRIEN

This book tells the story up to 1945 of a new form of national defence—civil defence. It opens with brief notice of the first attacks on Britain from the air during 1914–1918. It then records in detail the steps taken after 1924, first in secret and later with full publicity, to counter heavy air attack in a future war. It shows how Air Raid Precautions were based from the start on the two principles of harnessing this defence to the machinery of the Local Authorities, and inviting all sections of the community to share its burden. The Munich crisis was a dress-rehearsal for war and in the year that followed civil defence established its claim to be called a fourth arm. Six principal weapons of defence—the Air Raid Precautions and Emergency Fire Brigade Services, a warning system, the black-out, air-raid shelters and evacuation—were built up by September 1939 to a fair state of readiness.

Further months of respite gave opportunity for these defences, under the supervision of Regional Commissioners, to be improved, and new ones to be added. Then in 1940 began the storms and lulls of air attacks. These are recorded in outline and

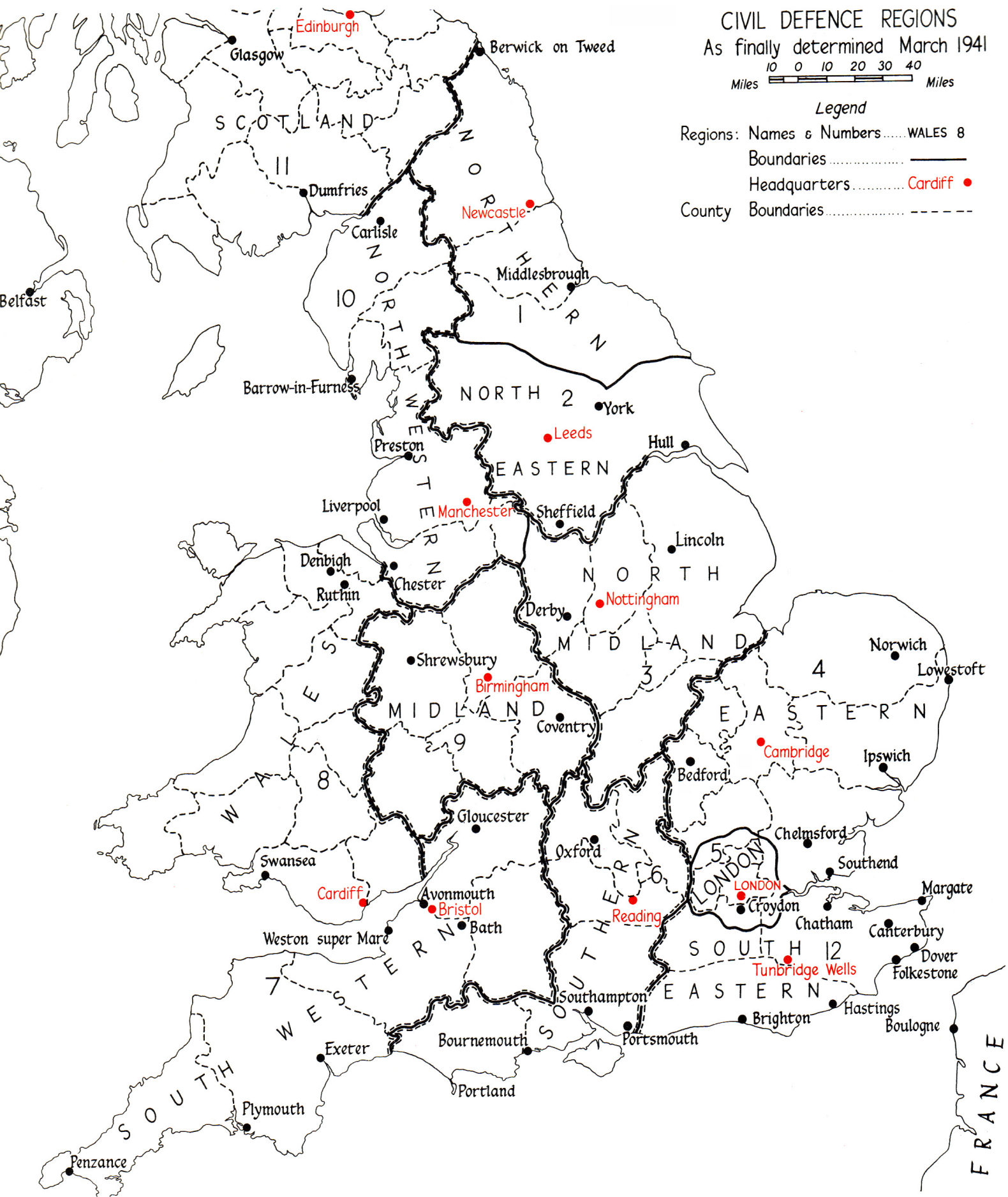
*Continued on Back Flap*

the chapters that follow describe in some detail the response of the various defences to these attacks, and the reorganisation which had to be undertaken.

The final chapter traces the plans made, and the fresh efforts needed by officials, the Civil Defence Services and citizens, to meet the new challenge of ‘V weapons’ which materialised in the last year of the war.

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# CHAPTER I

## INTRODUCTION

### Civil Defence

**T**HE civil defence of the United Kingdom in the war of 1939–45 grew finally into an affair of much complexity. A special Department of State, the Ministry of Home Security, was established at the outbreak of war to administer, with other central authorities and regional and local institutions, the many and changing problems to which it gave rise. Millions of ordinary citizens outside the Armed Forces became involved in its activities, both as victims, in some manner, of enemy aggression and as members of organised bodies giving war service. For the German air offensive against Britain developed, as experience during 1914–18 foreshadowed, into a major item of the enemy's strategy—a campaign in its own right. During certain phases of the six-year struggle the air attack on the people and property of Britain weighed heavily in the balance between victory and defeat.

Though the threat represented by German air bombardment varied much in intensity, it is inaccurate not to regard it as continuous. The enemy, as the attacker, possessed the initiative; and there is evidence to suggest that the initiative is even more valuable in modern air warfare than in land or sea operations. Thus the German Air Force, once overcome by the defences—as in the Battle of Britain of 1940—soon altered its tactics and employed new ruses and weapons. It was not until the main Allied armies had successfully assaulted German territory in March 1945 that the threat to these Islands, then taking the form of long-range rockets, finally ended.<sup>1</sup>

The civil defence organisation had therefore to remain alert and manned during five and a half years. Throughout this period its functions went far beyond the immediate duty of helping to counter air attacks 'on the ground' as these occurred. They included adjusting its operational organisation and methods to new forms of attack, maintaining and supplying special equipment, recruiting and training persons for new and often unpredictable tasks and planning the disposition of its share of manpower resources.

The last item in this list may serve as a reminder that civil

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<sup>1</sup> Main assault on the Rhine, 23rd/24th March 1945. The last rocket fell on British soil on 27th March 1945.

defence, wide though its activities became, was but one of a number of services defending Britain against air attack. The part of the Royal Air Force in this campaign was, of course, pre-eminent; and that of the Army's Anti-Aircraft Command was of almost equal importance. The Royal Observer Corps, under the control of Fighter Command, was the primary source of intelligence for the whole defence system about the movement over Britain of hostile aircraft.

The part played by these and other services forms a story with which this volume is only indirectly concerned. Attention is drawn to it here owing to the need to recall the wider picture it evokes if certain aspects of civil defence are to be fully understood. Two examples of the type of relationship in mind may suffice. Since during 1939-45 the nation's resources of manpower and materials were strained to an unprecedented degree, competition frequently arose between the claims on these of the more active defences and those of passive defence. Such competition was also evident in the loftier sphere of grand strategy. What, for example, were the respective weights to be attached for the defence of Britain against air attack to the passive method of civil defence and the aggressive counter-action of the Royal Air Force?

An attempt will later be made to notice some of the answers given from time to time to these questions. It will be sufficient to state here that the organisation of passive defence on British soil by civilian forces was given much more weight, both absolutely and relatively to other defence methods, than it had possessed under the German air bombardment of Britain during 1914-18.

It is true that the scale of the enemy's attack in 1939-45 was many times greater than it had been twenty-five years earlier. But this fact, since it is only a statement of quantity, does not destroy the value of all comparison between the air attacks on Britain in the two wars. The quantitative 'progress' which experts measure to estimate the scale of an attack does not, it cannot be too strongly insisted, tell the whole story.

The point is of importance for students of the subject in an era in which marked 'progress' has been made in the technique of air warfare by the invention of the atomic bomb. This invention has given fresh currency to the view that 'nowadays every war is different from the one before'—which, if it were valid, would abolish any need to learn the lessons of past experience.

Clearly, the British authorities planning defence measures between the wars profited from the experience of the air attacks of 1914-18. For this reason, and because of some similarities between the first series of attacks and the later ones, a brief summary of the 1914-18 assault will shortly be attempted.

The study of the planning process which follows will show that the

authorities were engaged in marrying the lessons of the past to a future hypothetical experience. Many years before another major war was probable or even possible, they were concerned, as the authorities of every State are bound to do, with preparing for such an event. The process was full of difficulties. For, if the metaphor may be continued, while the first partner brought the solid data of experience to the union the second showed the uncertainties and hesitations of a bride. Against what aggressor or combination of aggressors was Britain preparing to defend herself? What was the capacity of these aggressors in terms of aircraft, explosives and military skill to inflict damage on Great Britain?

The forecasts of the enemy attack, or the experts' answers to the second question, brought some curious results in the sphere of administrative planning. And the difficulties which confronted the planning authorities at the highest level in reaching decisions on the basis of hypotheses were accompanied by difficulties for administrators on a lower, more executive, plane.<sup>1</sup>

Some further observations must be made here on the peace-time planning which forms the topic of the first Part of this volume. This process, extending over most of the twenty-one years of peace, fell into two well-defined phases. In the first, lasting until the spring of 1935, planning for civil defence was the concern predominantly of the top strata of the Government—the Cabinet, the Committee of Imperial Defence and its sub-committees—and was conducted in secret. In the second, which opened with the creation of an A.R.P. Department at the Home Office, plans began to receive concrete application and to involve a much wider circle of central and local officials. They also, it is vital to note, then began to involve the general public, who became aware that practical steps were being taken to defend the nation against future air attack and were asked to co-operate in these preparations.

The forms and degree of this public co-operation during 1935–39 will be examined in the appropriate place. What requires emphasis at the outset is that public opinion, or more precisely the public attitude towards another war, was a cardinal factor in peace-time planning of civil defence, even during the earlier phase when this planning was being conducted in secret.

To state that we are still too close to the epoch now called 'between the wars' to pass lasting judgments upon it is but to repeat a truism. We are, nevertheless, able to distinguish some features of that epoch as pre-eminent. On the material level, for instance, the 'Great War' of 1914–18 had caused an unprecedented drain on the country's economic and financial resources, recovery from which in

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<sup>1</sup> See R. M. Titmuss, *Problems of Social Policy*, Chapters I and II.

the 1920's and '30's proved slow and difficult. On the moral plane the national exhaustion, though harder to measure, was probably as great. It seems fair to say that a large part of the nation continued right up to the startling international events of 1938 to comfort themselves with the idea that the war which ended in 1918 had been 'a war to end war'.

Both of these features deeply affected preparations for all forms of national defence. Neither the material resources nor the will for re-armament were readily available. To quote an official retrospective judgment, 'the failure to equip our forces on an adequate scale was mainly due to the political and economic circumstances of the decade before 1939, which had the result of postponing until too late the start of an effective programme of re-armament'.<sup>1</sup>

This situation had one unfavourable result on civil defence preparations which deserves to be singled out for mention. Owing to the slowness with which funds were made available for defence, technical experiments of various kinds, urgently needed to provide the planners with information, were long delayed. The formulation of policy regarding air raid shelters, for example, was seriously hampered by lack of data which only up-to-date experiment could provide.

It has been suggested that the public's attitude towards another war was a cardinal factor in planning. The air attacks of 1914-18 had proved that the public attitude *during* a war had attained quite new significance, and this lesson was constantly in the minds of the planning authorities. The first of the many committees to examine the problem of further air attack reported (in 1922) that 'the moral effect of air attack is out of all proportion to the material effect which it can achieve'. It recognised that the problem of morale, hitherto regarded as relevant only to the fighting forces, would apply in another war to the entire domestic population.

Events during 1939-45 were fully to justify this emphasis throughout the planning phase on morale. But it seems, at least on the evidence of recent history, that the temper of the British people does not become warlike until a war has actually started. Still suffering from the exhaustion, material and moral, of the 1914-18 ordeal the people were most reluctant to believe in the probability of another world-wide catastrophe. Planning for air raid precautions thus lacked the public support it might otherwise have received—until the catastrophe was imminent.

It appeared in retrospect to one who had taken a leading official part for thirty years in defence preparations that 'our traditional policy of peace was carried this time to the verge of risk and beyond'.<sup>2</sup>

<sup>1</sup> *Central Organization for Defence*, Cmd. 6923, 1946, p. 4.

<sup>2</sup> Lord Hankey, *Government Control in War*, 1945, p. 82.

## The War of 1914-1918

The first attack by hostile aircraft on English soil was made on Christmas Eve 1914 when a single German aeroplane dropped a bomb near Dover Castle, which caused no damage except broken glass. London was bombed for the first time on 31st May 1915 by a single German airship which dropped over a ton of bombs, mainly on the East End, killing seven people and injuring thirty-five. From the summer of 1915 until near the end of 1916 *Zeppelin* attacks on Britain by night were fairly frequent, and it was some time before effective means of countering them were devised. The official historian of these attacks reached the conclusion that, even if the *Zeppelins* had been built and maintained solely for the purpose of raiding the United Kingdom, they would from a military standpoint 'have more than justified the money and ingenuity that went to their building'.<sup>1</sup>

Though London was usually the enemy's main objective, navigational difficulties and other factors often resulted in his airships cruising at large over the countryside, dropping their bombs on isolated towns and villages and causing both damage and public alarm. East Anglia, lying on the raiders' normal path to London, received a special share of their attention. In a raid on Hull in June 1915 a single airship dropped high explosive and incendiary bombs which killed twenty-four people, injured forty, destroyed about forty houses and shops and damaged many others. Rioting broke out in the town afterwards, and shops owned (or supposedly owned) by Germans were sacked before order was restored by troops. In the next January the first large-scale deliberate attack on the industrial Midlands caused much public nervousness in that area.

This attack of 31st January 1916, though it was, in fact, to prove the last of the formidable airship raids, led to some important changes in defence arrangements. General responsibility for the air defence of Britain had been vested since September 1914 in the Admiralty, with the War Office playing an important but subsidiary role. This division of responsibility was found unsatisfactory; and in February 1916, when the assumption that the whole country was liable to air attack had been accepted, responsibility for all Home Air Defence was transferred to the Army. The operation of the defence system was in charge of Field-Marshal Lord French, Commander-in-Chief, Home Forces.

Lighting restrictions was the sphere in which the civil authorities, in the person of the Home Secretary, made their first major administrative contribution to the problem of air raid defence. An Order in

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<sup>1</sup> H. A. Jones, *The War in the Air* (Official History of the War of 1914-1918, Vol. III, 1931, p. 243). The whole of the present section is much indebted to this account.

Council of 12th August 1914, made under Section 1 of the Defence of the Realm Act,<sup>1</sup> which empowered the competent naval or military authority at any defended harbour to order the extinction of all visible lights during specified hours was the first regulation giving power to control lights. About a month later the first general regulation was made authorising the Home Secretary to issue orders for the extinction or dimming of lights in any specified areas. At the request of the Commissioner of Metropolitan Police, whose appeals to the public in the matter had been ineffective, the Home Secretary issued on 1st October 1914 a comprehensive order relating to London which introduced drastic 'dimming' of the metropolis.

Elsewhere in the country lighting restrictions became the subject of some confusion due to the fact that the Home Office, Admiralty, War Office and many local naval and military authorities were all concerned with them. Individual naval and military commanders soon adopted the practice of calling for aid from the civil power, in the shape of the local police, in enforcing their regulations. After many conferences between the three Departments, decisive action was taken to introduce more uniformity. Responsibility for lighting restrictions was concentrated in the Home Office, which issued a series of general orders on the subject on 8th April 1915; all existing orders made by the naval and military authorities were revoked.

A civil Department was thus, in one important sphere of defence and in a spirit of empiricism rather than of logic, given authority overriding that of the two Service Departments. After the big attack on the Midlands already referred to, lighting restrictions were extended to cover the whole of England except six western counties. Many local authorities in these exempted counties asked, however, to be included in the restriction schemes.

The problem of warning proved more difficult of solution. In the first phase of the war distribution of warnings had been entrusted to Chief Constables. Here again the Midlands attack, by causing an epidemic of false reports which in turn caused widespread stoppages of work, brought radical reform. At the urgent request of the Cabinet, Lord French was asked to prepare a new warnings scheme, which came into permanent operation on 25th May 1916.<sup>2</sup> This was based on the division of England, Wales and Southern Scotland into eight 'warning controls', each in charge of a 'warning controller' who represented the Commander-in-Chief, Home Forces. The warning control areas and the many smaller 'warning districts' into which each of these was divided corresponded to the telephone organisation of the country. The military authorities now became responsible for initiating the warnings, which were disseminated by civilian

<sup>1</sup> 4 and 5 Geo. 5, Ch. 29.

<sup>2</sup> See H. A. Jones, *op. cit.* Vol. III, pp. 171-178.

telephone operators in accordance with 'warning lists' prepared beforehand by the police.

The warning controllers had various sources of information about the movements of hostile aircraft. The most important, an elaborate system of observer posts, deserves brief mention because in this instance transfer of responsibility took place in the reverse direction. Manned originally by soldiers unfit for more active service, the majority of these posts throughout Britain were taken over by the police in December 1917.

This warning organisation seems to have worked well during the remainder of the war. It was concerned, of course, with operational needs, including the warning of factories on war work, and did not at first include any arrangements for warning the general public.

The controversial issue of public warnings did not become acute until the second chief phase of air bombardment, the daylight attacks by heavier-than-air craft of 1917. During the summer of 1916 the improved technique and organisation of Britain's defences finally got the measure of the *Zeppelins*. The Germans, suffering serious losses, correctly decided that there was no future for this weapon, at least in attacks on Britain. Since bombing attacks by aeroplanes had so far been only 'tip-and-run' affairs the winter of 1916-1917 introduced a welcome lull for the British people and the defences, comparable to the lull of 1943 or the spring of 1944 before the opening of attack by 'V-weapons'.

Lighting restrictions were, as a result, eased and the defences reduced. But in May 1917 the Germans began a series of assaults with twin-engined aircraft, called *Gothas*, which soon became severe. The daylight attack of 13th June on London by fourteen *Gothas* was the worst single attack of the war measured in casualties, which numbered 162 killed and 426 injured; 118 high explosive and incendiary bombs were dropped on the City and the East End. This raid, according to one authority, 'stirred the country'; and it was followed by another on 7th July against roughly the same targets which also caused many casualties as well as material damage estimated at £205,000.

Public feeling was now deeply roused, with indignation against the enemy and irritation at what were regarded, rightly or wrongly, as deficiencies in the defences. After the second big London raid the War Cabinet appointed General Jan C. Smuts as its special adviser on home defence against air raids, as well as on British air organisation in general. The reports he made to the War Cabinet cannot be summarised here<sup>1</sup>; though it must be mentioned that his proposals on air organisation had an important influence on the creation in April 1918 of a separate air service, the Royal Air Force.

The changes which followed mainly concerned the military aspects

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<sup>1</sup> See H. A. Jones, *op. cit.* Vol. V (1935), Appendices 6 and 7.

of the defence system. What is of more interest to this narrative is the development from the summer of 1917 of greater public nervousness under attack or the threat of attack. The strain of war had by this time been considerable, even for those not on active service. It is not surprising that sections of the public began to demand with some urgency that the Government should institute public warnings and provide public shelters. There was talk, doubtless originating from troops on leave from Flanders, that the enemy would soon employ poison gas against the British people in their homes.

The Government only gave in gradually and reluctantly to demands for public warnings in London. In July 1917 a system was introduced, under the control of the Commissioner of Police, which to those accustomed to the sirens of 1939–45 may appear somewhat primitive. Warnings were distributed partly by maroons (or sound bombs) fired into the air, and partly by policemen on foot, on bicycles or in cars carrying *Take Cover* placards and blowing whistles or sounding horns.<sup>1</sup> By late summer the Germans had abandoned daylight raids and turned to the new tactic of aeroplane attacks by moonlight. In December, after much further discussion, public night warnings for London were introduced, but only with a strict time-limit. It was not until March 1918 that the Home Secretary, on the advice of the Commissioner of Police, authorised the use of maroons at any hour of the day or night.

The problem of providing public shelters began to assume big proportions towards the end of 1917. The daylight attacks of the summer had caused large crowds to seek shelter in the Underground stations; and the moonlight attacks of September had brought a tendency to panic among a section of the people in the East End, well aware of the fragile nature of their dwellings. 'Trekking' into the safer western districts of London became a common practice.

The Commissioner of Police allowed police stations to be used as shelters, and other authorities in charge of public buildings followed suit. After a committee under the chairmanship of the Home Secretary had reported, the Government decided to extend this use of public buildings, and also by an Order-in-Council of October 1917, introduced the requisitioning of premises to serve as shelters. Sandbags were issued at the national expense. The provision of shelters in the provinces continued to be regarded by the Government, in spite of pressure, as a matter for the local authorities. A good deal of work on the provision of shelters, including the adapting of such places as mine workings and caves, was in fact carried on outside London.

By the spring of 1918 the threat was dwindling, though at the time this was by no means obvious even to experts. It is argued by the

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<sup>1</sup> See Col. W. T. Reay, *The Specials: the story of the Metropolitan Special Constabulary* (1920).

official historian of the topic that the German High Command's failure to stage a night-bombing campaign against London to coincide with Hindenburg's March offensive was one of its major strategical mistakes. During this period the War Cabinet was engaged in discussing the possibility of large-scale attacks on London by as many as 500 aircraft and of fires being started on a scale beyond the capacity of the fire brigade to handle, as well as the advisability of taking large anti-gas precautions. But the tide was, in fact, already on the turn. The last attack on London which occurred on Whit Sunday, 19th-20th May was also the last serious one of the war on any part of Britain.

Presented as a statistical sum, with the number of enemy raids and aircraft engaged, tonnage of bombs dropped and casualties caused as its components, this experience of air attack on Britain during 1914-18 no longer looks very formidable. There were in all 103 bombing raids (51 by airships and 52 by aeroplanes); and about 300 tons of bombs were dropped causing 4,820 casualties, 1,413 of which were fatal. London bore a large share of the attack, since about one-quarter of the total number of bombs were dropped on the Metropolitan Police District, causing death to 670 persons and injury to some 1,960.

These totals appear small; but when they are broken down into details many different pictures emerge. The two heavy raids on London of June and July 1917, for example, together caused 832 casualties (216 fatal), which amounted to 121 casualties for each ton of bombs dropped; and these casualty figures were to have much significance for the planning authorities of the future. The Midlands attack of January 1916 caused a degree of public nervousness out of all proportion to the total material damage it inflicted. Instances of individual attacks, like that on Odhams Press, Long Acre early in 1918, causing an amount of destruction or alarm which defied the averages could easily be multiplied.

The conclusion, in any case, the authorities reached was that these air attacks on Britain were overwhelmingly justified on military grounds by the results. Men, material and money had been diverted on a large scale from other purposes to Home Air Defence. The output of munitions and other factories had at certain periods been seriously curtailed. The killing and injury of civilians in their homes in a country which had not been invaded was a new feature in war, about the importance of which as an item in the military account there may have been some difference of expert opinion. No doubt, however, was felt that the behaviour of the population under this form of attack had been a most significant factor in the general war effort.

An attempt has been made in these pages to emphasise the main aspects of the experience of 1914-1918 with which the civil authorities

were concerned, and to show that the role of these authorities was in most spheres subordinate to that of the Service Departments and local military commanders. The importance of the part performed by what was already being called 'passive defence' did not, however, escape official recognition. An official summary of the matter made after the war was over concluded: "The effective organisation of the 'passive' defence was of great importance from the military point of view".

## Epilogue, or Prologue?

The Committee of Imperial Defence, created in 1904 and absorbed into special War Cabinet machinery on the outbreak of war, was re-established in November 1919. The highest organ, under the Cabinet, for planning defence measures from 1904 to August 1914, it was to perform the same function until September 1939, reinforced after 1924 by the creation, as a permanent part of the machinery concerned with defence, of the Chiefs of Staff Committee.

In November 1921 the Committee asked the principal Service experts to report on the problem of possible future air attack on the United Kingdom. This report, which appeared the next year, accepted the conclusions of the Air Staff about future air attack, which were briefly as follows. France was taken as the hypothetical enemy since the French Air Force was the only such force on the Continent in a position to make such an attack—not that the Government in any way anticipated war with France, but this hypothesis gave the military thinkers a basis from which to start diagnosis and planning. France's Air Force could drop an average weight of 1,500 tons of bombs on Britain each month by using only twenty bombing days in the month and only fifty per cent of its aircraft. London, which would be an enemy's chief objective, could be bombed on the scale of about 150 tons in the first 24 hours, 110 tons in the second 24 hours, and 75 tons in each succeeding 24 hours for an indefinite period. It was to be anticipated that an enemy would put forth his maximum strength at the outset. And, as has already been noted, the view was expressed that the moral effect of such attacks would be proportionately much greater than the material damage.<sup>1</sup>

The picture thus presented of the rapid development in air warfare of the superiority of the offensive over the defensive caused some consternation in high quarters. Lord Balfour, then presiding over the Committee of Imperial Defence, drew the attention of the Prime Minister, Mr Lloyd George, to these conclusions in a note which emphasised the serious nature of the potential threat to London. In 1923 a further committee under Lord Salisbury's chairmanship reported that the situation described in this note had become 'slightly

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<sup>1</sup> p. 6.

worse', since the Air Ministry now calculated that the French Air Force, unless adequately opposed, could (in theory) drop 168 tons on London in the first 24 hours, 126 tons in the second 24 hours, and 84 tons in each succeeding 24 hours for an indefinite period. It will be recalled that the total weight of bombs dropped by the Germans on Britain during 1914-1918 was about 300 tons.

These conclusions had, of course, much bearing on plans for the development of the recently-created Royal Air Force. But there was no longer room for doubt that, however strong the Royal Air Force might eventually become, the menace now presented to Britain by hostile air attack was grave. At a meeting in December 1923 of the Committee on the Co-ordination of Departmental Action on the Outbreak of War, the Air Ministry suggested that the Home Office was the appropriate Department to initiate a scheme of air raid precautions, and the Home Office concurred. In the following month the Committee of Imperial Defence decided to appoint an Air Raid Precautions sub-committee, under the chairmanship of the Permanent Under Secretary of State for the Home Department, and this decision was soon afterwards endorsed by Mr MacDonald's first Labour Government.

## CHAPTER II

### PLANNING:

(May 1924 – April 1935)

**T**HIS committee met for the first time, under the chairmanship of Sir John Anderson, on 15th May 1924.<sup>1</sup> It met regularly during the first phase of its work which ended in 1929, and continued to function thereafter in somewhat altered form for a further six years. Its chairman, Permanent Under-Secretary of State at the Home Office since 1922, was destined to preside over its deliberations for nearly eight years.

The first year of the committee's work was the most active of the first five-year period; and it produced material for a comprehensive report which must be summarised in some detail. The international background of this year's work was that of transition between post-war disillusionment and differences and a more co-operative era. The differences caused through French occupation of the Ruhr and Germany's default on Reparations had been eased by the summer of 1924 by the fall of Poincaré and acceptance of the Dawes Plan for Reparations. But the pacific policy of M. Briand and the Locarno Agreements still lay somewhat in the future. At home, Mr MacDonald's minority Government was decisively rejected at the polls in October 1924 and Mr Baldwin was returned to power with a large Conservative majority.

The A.R.P. Committee was composed, besides its chairman, of six members, representing the Committee of Imperial Defence (in the person of its Secretary, Sir Maurice Hankey),<sup>2</sup> the three Service Departments, the Ministry of Health and the Office of Works. It at once used its power to co-opt additional members to secure representation of the General Post Office. The Air Ministry soon adopted the practice of sending two representatives, and from the autumn of 1925 the Board of Trade usually also sent two. Invitations to other Departments and official bodies (e.g. the Chemical Warfare Research Department) to attend particular discussions were issued fairly often.

The committee's terms of reference were 'to enquire into the

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<sup>1</sup> The Air Raid Precautions Sub-Committee will usually be called in this chapter the A.R.P. Committee or simply the committee.

<sup>2</sup> Secretary to the Committee of Imperial Defence, 1912; Secretary to the (War) Cabinet, 1916; held both offices until retirement in 1938; member of the War Cabinet, 1939-40.

question of Air Raid Precautions other than Naval, Military, and Air Defences', and to prepare an annual report of progress with such precautions for the consideration of the Committee of Imperial Defence. Even within the bounds of this definition the subject, as the chairman remarked at the outset, was a wide one and presented a problem of much difficulty. The committee's task, in fact, was to examine all means by which the civil authorities could co-operate to make the policy of the Fighting Services effective. The chairman suggested the following seven main topics for discussion—warning, prevention of damage, maintenance of vital services, repair of damage, movement of the seat of Government, legislative powers required, and departmental responsibility for all action recommended. The second of these, the 'prevention of damage', embraced such considerable problems as lighting restrictions, camouflage, shelters, gas masks and evacuation of the civil population.

## The Scale of Attack

At its second meeting the committee was given data by the Air Staff on the extent of the danger represented by Continental air attack. The Air Staff had revised its calculations of 1922 and 1923 noticed in the previous chapter, in an upward or less favourable direction.<sup>1</sup>

The scale of attack that might in their opinion be reasonably anticipated was now fixed at about 200 tons of bombs in the first 24 hours, 150 tons in the second 24 hours and 100 tons in each subsequent 24 hours. The conclusions that an enemy would exert his maximum strength at the outset and that London would be his main target were re-affirmed. Allowing for the best that the defence could do, not less than 50 per cent. of the bomb tonnages just mentioned might be expected to fall on some part of London; and the period of attack on a reduced scale after the first 48 hours would probably be at least a month. The Air Staff anticipated that an enemy would concentrate on daylight attacks, which (measured in bomb tonnages) would be three times heavier than night attacks. Both high explosive and incendiary bombs must be expected, though the existing type of French incendiary bomb did not offer serious menace to modern buildings unless these contained inflammable material. Use of poison gas was not considered likely, though the possibility of this could not be ignored.

The serious picture thus presented assumed its darkest tones when the Air Staff proceeded to estimate casualties. The 300 tons of bombs dropped in the 1914-18 attacks, the experts pointed out, had caused 4,820 casualties, or 16 per ton of bombs. The 832 casualties of the two big daylight attacks on London in the summer of 1917, however,

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<sup>1</sup> pp. 12-13.

produced an average of 121 casualties per ton; and sixteen night raids on London in 1917-18 gave an average of 52 casualties per ton.<sup>1</sup> After weighting these figures with various factors, the experts concluded that 50 casualties (one-third of which would be fatal) per ton formed a reasonable estimate of casualties caused by air attacks of the future on densely-populated areas. For other areas this figure should be reduced in proportion to the actual density of population.

By multiplying tonnages which might be dropped on London by this figure of 50, the Air Staff reached the following formidable totals (which they regarded as conservative) of the probable scale of air raid casualties in London at the outset of another war:

	<i>Killed</i>	<i>Wounded</i>	<i>Total</i>
First 24 hours . . . .	1,700	3,300	5,000
Second 24 hours . . . .	1,275	2,475	3,750
Every subsequent 24 hours . . . .	850	1,650	2,500

Opportunity was again taken to emphasise the probable moral effects of modern air attack. The possibility of chaos in the community, arising from the moral collapse under bombardment of persons employed in vital services such as transport and lighting, was suggested.

These calculations presented the A.R.P. Committee with a formidable problem. To plan adequate precautions against attacks on this scale seemed almost impossible, and they turned to consider whether the most effective precaution and best use of whatever funds would be available might not lie in expanding the active defences. But consultations with the Chief of the Air Staff, Air Chief Marshal Sir Hugh Trenchard, produced neither reduction of the estimates just quoted, nor hope that even largely expanded defence forces would provide much immunity. The only course open to the committee, therefore, was to continue their inquiries 'with a view to mitigating, so far as possible, the evils attendant upon aerial bombardment'. The Air Staff calculations were accepted by the committee as the basis of these inquiries, and included in their first report with the comment that, although they found them alarming, they cast no doubt upon their soundness.

## The A.R.P. Committee's First Report

At one of its earliest meetings the committee added a further main heading—education of the general public to realisation of the significance of air attack—to the seven listed earlier. It began examination of the total problem with the aid of memoranda on

<sup>1</sup> p. 11.

specific topics by official bodies and discussions in committee with the representatives of various Departments. Early in 1925 the Committee of Imperial Defence gave approval for Departments enquiring into this problem to begin confidential consultations with discreet persons outside Government circles. The committee itself only resorted to this practice on a few occasions, the most important of which in this first year was a discussion with the General Managers of the four chief Railway Groups.

Other action taken this year included submission to the Man-Power Committee (a principal sub-committee of the Committee of Imperial Defence) of a tentative list of the various 'anti-aircraft services' for which men would be required immediately on the outbreak of war, with the comment that an appreciable number of persons would be needed. At the committee's instigation lighting experiments were begun at the Oval cricket ground, and preparatory work was done on the problem of warning. One section of the warning organisation, the 'Observation System', had begun to take practical shape at the circumference of the planning effort. It will be recalled that the duty of manning most of the cordoned system of observation posts of the recent war had been transferred in 1917 from soldiers unfit for active service to the police.<sup>1</sup> The committee was informed in 1925 by the War Office representative (Maj.-Gen. E. B. Ashmore, who had been in command of the London defence system in 1917-18) that the Observation System, manned by unpaid civilian volunteers enrolled as special constables, had been re-established in Kent and Sussex and that practical tests of its efficiency were about to begin.

Though claiming to be no more than a first survey of the problem the report made detailed proposals under each of the eight principal headings of discussion. The summary which follows may seem to the reader of inordinate length, especially in view of the separation in time of these proposals from the outbreak of war. Nevertheless, they reflected the current official thinking on the problem. They represented a comprehensive—and in many respects masterly—effort of administrative planning which contributed much to the future.

The committee's admission, already noticed, of alarm at the Air Staff calculations was due primarily to realisation of the danger which might threaten London. No doubt they were familiar with this prophetic passage in General Smuts' first report of 1917<sup>2</sup>:

London occupies a peculiar position in the Empire of which it is the nerve centre, and we consider, in the circumstances, that its defence

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<sup>1</sup> See p. 9.

<sup>2</sup> See p. 9.

demands exceptional measures. It is probable that the air raids on London will increase to such an extent in the next twelve months that London might through aerial warfare become part of the battle front.

The attacks of the winter of 1917–18 can hardly, as has been seen, be called the true fulfilment of this prophecy, which still lay in the future. But the emphasis General Smuts had placed on the defence of London acquired deep significance from the increased scale of attack. The committee reported that they had inquired whether, (i) the vital activities normally centred in and round London could be moved to a less exposed part of Britain, and (ii) the life of the nation could be maintained if these activities in the London area should be stopped or seriously curtailed—and had found the answers to both these questions to be a decided negative. They therefore concluded that the hypothesis in regard to London was crucial, and had felt compelled to concentrate their discussions and recommendations on the Metropolis:

Three further general comments on the extent of the menace must be noticed. The Air Staff had given emphatic expression to the view that, whatever defence measures might be adopted, the determining factor in defeating air attack would be the strength of the counter-attack carried out by Britain's bombing aircraft against the enemy in his own country. The committee reported their agreement with this view; and their conclusion that the *Rules of Aerial Warfare*, drafted by a Commission of Jurists at The Hague in the winter of 1922–23 provided no appreciable protection for a civil population against air attack. Apart from the question of how much confidence to place in international agreements, targets recognised as legitimate in these *Rules* would normally be situated so close to populous centres that even a discriminating enemy could not avoid injuring civilians and their property. Finally, the committee put on record that, in view of the seriousness of the menace, their recommendations could only be regarded as palliatives.

*The Education of Public Opinion to Realisation of the Menace.* The committee showed full agreement with the emphasis of the Air Staff on the serious moral consequences of air attack on the new scale. It was their function to suggest means by which such consequences might be avoided or alleviated; and this, which was to pre-occupy every subsequent committee concerned with air raid protection up to 1939, was far from easy. Part of the difficulty arose from the vagueness of the data offered by past experience. At some times and places during 1914–18 the British public, as this narrative has noticed, had reacted to air bombardment in a mood of indignation; at other times and places it had shown some tendency to panic. It was not surprising that individual members of planning bodies between the wars held

various opinions on the vital subject of the probable public reaction to the sustained, heavy, attacks now possible.

Uppermost in the minds of this committee was the prospect of heavy continuous attacks striking the British public, if the phrase may be allowed, 'out of the blue'. They laid emphasis on the fact (undoubtedly true then and for many years to come) that the extent of the danger to which Britain, and especially London, were now exposed was not generally understood. Sudden attacks on a civil population mentally unprepared for anything of this magnitude would entail serious danger of panic on a large scale. The dilemma was posed which had doubtless exercised the highest authorities during 1914-18, and was to become more familiar as the technique of air warfare improved. Should the public be told beforehand in the interests of national safety of a threat that might never materialise? Or should the risk of maintaining secrecy be taken, in the hope that if the worst did happen the necessary courage and steadfastness would be forthcoming?

The remedy proposed by the committee favoured the second of these two courses. They recommended, first, preparation of a Royal Proclamation for issue immediately on the outbreak of war which would outline conditions likely to result from air attack, emphasise the relief a vigorous counter-offensive would afford, stress the absolute necessity of maintaining vital activities, and call on the people loyally to obey any orders and instructions the authorities might make, as well as to exhibit their tried qualities of courage and endurance in danger. But until war actually occurred, the education of the public in this matter should only, the committee concluded, be slow, gradual and deliberate. Consultations had already been authorised between Departments and certain persons outside Government circles. The process of letting responsible persons into the secret should, the committee thought, be expanded. It would be expanded still further if the recommendations made later to train the police, fire brigades and other bodies for special duties in relation to air raid defence were adopted. By such means awareness of the extent and possible consequences of the threat would develop among a portion of the public, and this would be combined with knowledge that steps were being taken to avert or minimise the danger.

The concluding remark of the committee on this topic deserves quotation. 'It has been borne in upon us', they said, 'that in the next war it may well be that that nation, whose people can endure aerial bombardment the longer and with the greater stoicism, will ultimately prove victorious.'

*The Warning System.* It is important for the future history of this matter to note that the committee's views on it were conditioned by the experts' conclusion that continuity would be an outstanding feature

of future air attack. Bombing during 1914–18 had been episodic rather than continuous. Nevertheless, the experience of warnings gained in these attacks, and the successful operation of the system set up in 1916, offered firm data for the committee's examination of this problem.<sup>1</sup>

Experience had proved that interruption of work in factories and elsewhere was a serious by-product of air attack; under continuous bombardment it might well become a major item on the debit side of the account. Instances were not uncommon during 1914–18 of workers refusing to attend factories until they had been given definite promises of early warning of the approach of aircraft; the demand from 1917 onwards for extensions of public warning in London had been insistent. It seemed clear that to accede to demands of this kind by introducing a general warning system immediately on the outbreak of war would be to help the enemy to attain his objects.

The committee proposed that such a system should be worked out in advance, but that it should be left to circumstances after the emergency had arisen to dictate whether this should be put into operation. They outlined in some detail the form which this general system should take. They distinguished between, (i) collection of information by various methods regarding enemy activity which was a Service responsibility, and (ii) distribution of information to the threatened areas and the public, for which the Services and the Home Office shared responsibility. The first function would depend primarily on a system of observation posts which, the last war had proved, could be most efficiently worked through the police. The new network of such posts in Kent and Sussex manned by volunteers enrolled as special constables had successfully passed its first practical tests.

The second function, or warning proper as distinct from observation, was more complicated. The committee first divided air attacks into two main classes on a principle, it is of interest to note, similar to that adopted by Lord Balfour in 1903 for the classification of hostile invasions. Attacks on a scale which might cause much damage and destruction were called 'mass attacks'; those of a less ambitious kind designed mainly to distract and alarm were called 'raids'. A clear demarcation between these two classes should, the committee thought, be established by the Air Staff prior to the outbreak of hostilities. 'Mass attacks', they went on to propose, should alone be considered fit occasions for the issue of warnings to civil organisations; 'raids' should be disregarded for this purpose. After distinguishing between two types of attack, the committee went on to distinguish between two classes of warning. They considered the system should arrange for, (i) a preliminary warning issued only to authoritative bodies such as the police, fire brigades and some industrial concerns

<sup>1</sup> See pp. 8–9.

which required time to put their anti-aircraft measures into operation, and (ii) the warning proper to be issued fifteen or twenty minutes later when the attack was imminent. The purpose of this proposal was, of course, to reduce as far as possible the period in which normal activities would be interrupted.

The details of the whole system, it was suggested, should be worked out by the Home Office in consultation with the Air Ministry, War Office and General Post Office. The Home Office should be responsible for compiling lists, to be periodically reviewed, of persons to whom warnings of the two kinds would be sent. Since distribution would be entirely dependent on the public telephone system it was important, from the mechanical point of view, to keep the number of these recipients within strict limits.

The committee held decided views on the advisability of issuing a public warning or 'general alarm'. They deprecated resort to this unless conditions in a particular town or district made it clearly desirable. They advised that discretion in this matter should rest with local authorities, who should be told it was national policy to discourage public warnings. In London it would rest with the Government to determine whether a general alarm was required at the outset of hostilities. This recommendation, it may be remarked, has incidental interest as one of the only three passages in the report in which reference is made to local authorities.

The formidable problem of the *Prevention of Damage* was approached by distinguishing between, (i) measures to increase the difficulties confronting attackers, (ii) measures to protect persons and property and, (iii) what was described as 'evasion'. Protection against poison gas, originally included under this heading, had now been given the status of a separate topic.

The first class of measures comprised, (i) lighting restrictions, and (ii) concealment. The committee frankly confessed themselves somewhat baffled by the divergent views expressed about the efficacy of the lighting restrictions adopted in 1914-18. There had been occasions during the war when in some places, for example the London parks, lighting had been not reduced but increased in order to confuse the enemy. The official historian later expressed the view, strongly held in some official quarters, that 'there is no doubt that the darkening of English cities was overdone' during 1914-18.<sup>1</sup> The degree of success achieved by severe restrictions in misleading the enemy had, according to this school of thought, been outweighed, once efficient warnings had been introduced, by the psychological and material disadvantages.

The committee decided that more practical experiment was required before they could recommend any particular measures of lighting restriction. Experience in 1914-18 pointed clearly to the

<sup>1</sup> H. A. Jones, *op. cit.* Vol. V, p. 3.

necessity for the issue of lighting regulations to be vested in one central authority, which should continue to be the Home Office. The Fighting Services should, in general, be asked to conform with respect to their property with lighting regulations issued by the Home Office.

The question of 'concealment' received only brief treatment. The committee had concluded that the enemy would probably not try to secure high accuracy of bomb-aiming but would be content with indiscriminate bombardment of the capital. To mask the mass of London—Cobbett's 'Great Wen' grown to such further sprawling proportions—did not appear feasible. Smoke screens had not yet been developed to give adequate cover to large areas from the air, and were very costly to operate. The best that could be done was to press on with practical experiment in the hope that means would ultimately be found of concealing restricted areas of vital importance.

Measures of protection included not only the problem of shelters, but the wider subject of protection of public buildings and those of national importance. The committee were not sanguine about the prospect of modern buildings withstanding direct hits from bombs employed in a future war but they thought that adequate protection should be possible against fragments and near misses. What was immediately required was technical data, which could only be obtained by direct experiment, about the damage caused by bombs of 500 lbs. and upwards. The War Office had already been asked to begin experiments on this question, and the Air Ministry and the Office of Works should be taken into consultation. Once the essential information had been obtained, the Office of Works should be asked to prepare plans for provision of public shelters and the protection of national buildings.

The subject of 'evasion', or evacuation as it was alternatively described, is so fully treated elsewhere in this series<sup>1</sup> that only brief attention to the committee's views on it is called for here. Inquiries, it has been noticed, had brought the definite conclusions that, (a) no appreciable portion of the activities normally centred on London could be moved to a less exposed area, and (b) the life of the nation could not be maintained if these activities in London's area should be stopped or seriously curtailed.<sup>2</sup> The metropolis, the committee had been informed, 'might be taken as representing approximately one-third of the belligerent strength of the nation'. It was clearly necessary to rule out all consideration of its wholesale evacuation, and to concentrate on the opposite policy of bending every effort to maintain its vital functions.

Yet though necessity seemed to demand that the London public should remain at their posts the committee was deeply impressed,

<sup>1</sup> R. M. Titmuss, *op. cit.*

<sup>2</sup> p. 18.

as this narrative has shown, by the moral effects of attack, including the possibility of panic among sections of congested urban populations. They were also fully aware of the limitations imposed, even in grave emergency, on Government regulation in Britain by democratic methods and a democratic outlook, and recorded their belief that the public would not tolerate drastic regulations forbidding all movement. They therefore recommended that, while those concerned with maintaining London's vital activities should be encouraged or even required to stay at work, *les bouches inutiles* (or more politely those, especially women and children, whose functions were dispensable) should be both encouraged and helped to leave. Such help would require much detailed advance planning, especially with regard to transport, accommodation, food and education; and it was proposed that the Ministries of Health and Transport and the Boards of Trade and Education should draw up schemes for these matters. Encouragement of *les bouches inutiles* to put discretion before valour should take the form of full official instructions issued immediately war broke out, either in the Royal Proclamation already proposed<sup>1</sup> or in a special communiqué. These, besides stating official policy, should urge the need to avoid panic and advertise arrangements for transport and accommodation.

The problem of evacuating art treasures and other valuable movable property was more manageable. The Office of Works should be charged with this responsibility and with that of devising means by which important records, such as those in Somerset House, which could not readily be moved might be protected.

*The Maintenance of Vital Services, and Departmental Responsibility for all Action Recommended.* It will be apparent that in the important matter of suggesting allocation of responsibility for the many duties involved to Departments and other bodies the committee had been proceeding in a practical rather than an *a priori* manner. It was not their business, they pointed out, to make concrete proposals regarding matters which were properly the concern of the Departments. They had confined themselves to compiling, after consultations with these, a list of the various schemes which in their view Departments should prepare. This list represented, in effect, an agreed distribution of air raid precautions' functions between the different branches of Government. Twelve Departments and six standing or special committees were involved. For most of these drafting of schemes would entail considerable work, including many inquiries outside official circles, spread over a long time. After Departments had been able to work out schemes and discover the details requiring legislation, they were to take up these points directly with the War Emergency Legislation Committee.

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<sup>1</sup> See p. 19.

But this principle of what may be called dispersal of official responsibility was not, the committee well realised, sufficient. The Departments' detailed schemes would need to be dove-tailed and brought within a single plan, for which purpose a standing A.R.P. Committee should be established.

The Committee's remarks on maintaining vital services amounted to little more than enumeration of these (e.g. transport and water supply) with suggestions as to which Department should draft schemes regarding them. But one topic discussed in this context requires fuller notice. It has been mentioned above that early in 1925 the committee had sent the Man-Power Committee a list of the different 'anti-aircraft' services for which men would be required immediately war broke out.<sup>1</sup> The adjective employed is of some historical importance. For it had commonly been used during 1914–18 to indicate all the services, military and civilian, in any way engaged in Home Air Defence; and the committee was still using it in this sense, while careful to disavow its own responsibility for those engaged in military defences. In another war, as the committee envisaged it, all civilians who remained at work in the danger zone would be performing 'anti-aircraft' service. And the list sent to the Man-Power Committee comprised those familiar emergency and utility services—such as ambulance, fire brigade, gas and road transport services—which, being subject to exceptional strain under air attack, would require additional manpower. No conception, that is to say, had yet emerged of specialised A.R.P. services. In so far as duties would arise which could not be regarded (like decontamination after gas attack by municipal street-washers) as an extension of the functions of an existing service these would fall upon the police and special constabulary.

It is also interesting to note that the committee, envisaging all civilians remaining at their posts in the danger zones as performing service merely by so doing, were seriously concerned with the problem of how to keep them 'on the job'. They suggested, first, that the Treasury should draw up schemes for disablement pensions or insurance as an inducement to remain at work. But in case such inducements should be insufficient, advance schemes should be prepared whereby workers would be enrolled in order to secure discipline.

*The Form of Control*, though one of the last topics to be dealt with, claims attention after the proposals just noticed. Its treatment by the committee must be described as ambiguous, since the type or degree of control envisaged is nowhere defined. It appeared to them that some form of control applicable to the whole population must be in readiness for adoption immediately a war broke out. They discussed the alternatives of military control or some form of civilian

<sup>1</sup> p. 17.

control, and decided in favour of the latter. This infant prodigy, still obscure in shape and character, was therefore deposited in the bosom of the Home Office who would be aided in the task of rearing it by the nation's police forces.

*The Repair of Damage* to persons and property was briefly discussed. Calling attention to the formidable estimate of 2,500 casualties in London every 24 hours (after the first 48 hours, during which the rate would be higher), the planners emphasised the elaborate peace-time arrangements needed to provide an adequate number of doctors, ambulances, hospitals and burial grounds. These problems fell clearly within the jurisdiction of the Ministry of Health. They also pointed out that the fire brigades (like the ambulance services) were responsible to a large number of independent authorities, and lacked adequate reserves of manpower. Being convinced that in future air attack the fire brigades, especially in London, would be faced with abnormal demands they advised that the Home Office should prepare schemes for establishing central control over them, and for expanding them should this prove necessary. They also drew attention to the probable magnitude of the tasks of demolishing half-destroyed buildings and clearing debris from the streets.

The committee gave much attention to the problem of the *Movement of the Seat of Government*, weighing the advantages of safeguarding the central administration by removing it from the capital against the moral depression in the country and throughout the Empire which this exodus would undoubtedly cause. Though recognising that the question could only be settled by the Government in office when the emergency arose, they clearly stated their view that the moral aspects of the matter outweighed the advantages of removal. But they recommended that the Office of Works should make plans for both partial and total evacuation of Whitehall should these courses be dictated by the enemy. Though Departments should stay in their present offices as long as circumstances permitted, plans must in any case be laid for alternative accommodation for isolated 'casualties' within a radius of two miles of Whitehall. Partial removal, should this be necessary, should take the form of first evacuating the Departments least concerned with active prosecution of the war—perhaps *les Ministères les moins utiles*. In the case of complete evacuation becoming necessary Birmingham and Liverpool might be suitable alternative centres for the seat of Government.

*Anti-Gas Measures.* Poison gas, first used by the Germans near Ypres in April 1915, ranks with aircraft, the submarine and the tank as one of the four chief new weapons of war introduced during 1914–18. Rumours that the Germans would drop gas on the British people from aircraft had been in circulation, particularly in London, during the latter half of the war; by 1918 the War Cabinet had been

giving serious consideration to the question of taking large civil anti-gas precautions. The problem, therefore, was not new; and it had acquired a considerable deposit both of battle experience and technical study.

The latest fruits of this study had recently been reported to the Committee of Imperial Defence by the Chemical Warfare Committee in a document called *The Protection of the Civil Population against Gas Attack*. The A.R.P. Committee referred to this report with approval, but recorded that the proposals of the Chemical Warfare Committee had been at variance with their own as regards, (a) the form of control to be adopted, and (b) issue of warnings to the public. The latter body had emphatically recommended that the central authority which should command the whole scheme of gas protection should be military, and had advised in favour of immediate public warnings. After discussion, however, the A.R.P. Committee had secured the concurrence of the chemical warfare experts with its own, opposite, proposals. They disagreed with the arguments for public warnings at the outbreak of war since they concluded it was unlikely that gas would be used in the first stages, and that time would therefore be granted to learn from experience whether a general alarm was necessary. They based this conclusion on the facts that France had adopted a formula undertaking to refrain from using gas as a weapon of war provided that her antagonist made a similar undertaking, and that the Washington Convention on this subject had recently been re-affirmed by the League of Nations Conference on Arms Traffic at which most nations of the world, including Germany, had been represented.

Otherwise, the planners confined themselves to advising that four subjects should receive special attention: (i) The service of decontamination, which was of the highest importance and should be put into an efficient state as soon as possible; (ii) the problem of gas-proofing buildings which should be investigated by the Office of Works in consultation with the Chemical Warfare Committee; (iii) training, which should begin without delay, of the police in anti-gas measures, the use of gas-masks and protective clothing, and (iv) the spreading as widely as possible of knowledge about the nature of poison gas attacks and the measures which could be taken to guard against them.

### Progress, 1926 – 1929

In approving this report the Committee of Imperial Defence agreed that the A.R.P. Committee should become a standing committee and continue its inquiries with the same terms of reference. In addition, they submitted the report to the Cabinet, with particular reference to the topics of education of the public and

removal of the seat of government. They authorised Departments to make the preparations just described provided no expenditure was incurred without Treasury authority; and took special note of the Chemical Warfare Committee's report on *The Protection of the Civil Population against Gas Attack* already alluded to, and a Board of Trade report on *The Supply of London in the event of the Port of London being wholly or partially closed*. The Board of Trade was asked to continue its investigations and to examine the best means of maintaining distribution machinery in London and other objectives, and the provision of supplies to areas which might become congested by the influx of refugees. Finally, the Committee asked Departments to give all assistance possible over experiments concerning protection against air bombardment and gas attack. Action of this nature was, of course—and the point requires emphasis—subject to the financial proviso just mentioned.

Before noting the conclusions of Mr Baldwin's Cabinet on the two matters specially referred to it, a few remarks must be made on the political background to the planning of the next four years. By early 1926 what seemed at the time and for some years to come a solid contribution to harmony had been achieved. Austen Chamberlain, Briand and Stresemann had concluded in October 1925 at Locarno agreements which Mr Chamberlain felt able to call 'the real dividing line between the years of war and the years of peace'. The year of the Locarno Treaties, according to an historian of the epoch, 'marks definitely the conclusion of a period of preliminary settlement, and the start of a "policy of fulfilment" which promised at least a temporary stability'.<sup>1</sup> Admission of Germany to the League of Nations and the opening of the League's Preparatory Commission on Disarmament soon followed. Two years later the Briand-Kellogg Pact for 'outlawry of war' was enthusiastically received by world public opinion and signed by almost every State. By 1930, according to the authority just quoted, 'all over the world there appeared at first sight to be solid material for satisfaction'.

Britain shared during 1925-29 in this mood of growing optimism and in the world economic recovery which accompanied and fortified it. The Conservative victory of October 1924 ended minority government and gave Mr Baldwin almost five years of power. Though the General Strike of May 1926 could only be regarded as a domestic disaster, this proved the end of a stormy phase of industrial relations. If the phenomenon of mass unemployment and the condition of Britain's staple industries were causing serious concern to some observers, the annual progress of trade in what was often described as a 'boom period' satisfied the more complacent and the less far-seeing.

Future historians may conclude that relief that Britain was emerging

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<sup>1</sup> G. M. Gathorne-Hardy, *Short History of International Affairs* (1938), p. 139.

from the twin horrors of war and economic chaos, satisfaction with the progress being recorded and absence of any desire to look far beneath the surface of events were the main elements of Britain's public temper in the 1920's. The round of matrimonial strife, cocktails and brittle laughter of Mr Coward's characters doubtless portrayed the life of only a fringe of the society of that day. But the chief impresario of the time, Charles Cochran, was later to characterise the attitude of audiences of this period as predominantly one of 'cheerful unconcern'.

Mr Baldwin's Cabinet considered the two matters particularly referred to it by the Committee of Imperial Defence in December 1925.<sup>1</sup> They decided that the question of moving the seat of Government should for the present remain in abeyance; and that the improvement in international conditions caused by the Locarno Agreements made the moment ill-timed for positive steps to educate the public about the threat represented by enemy air attack. The gradual dissemination of knowledge through inquiries of Departments and sub-committees of the Committee of Imperial Defence would be sufficient, though the Committee was asked to keep the problem under review.

When the A.R.P. Committee was reconvened on 1st February 1926 some seven months had elapsed since its previous meeting. The Committee's composition was substantially unaltered by the change of status. At the re-assembly it discussed the method which should regulate its future inquiries, now that its first report had been approved by higher authority and instructions had been issued to Departments to make detailed investigations and draw up schemes. It was practically impossible, it decided, either to draw a picture of conditions likely to result from attack on the scale foreshadowed by the Air Staff or to lay down a set of general working conditions applicable to the very varied problems involved in air raid precautions. It concluded that the best procedure would be to ask Departments concerned with preparation of plans to attend its meetings with the two-fold object of (i) arriving (so far as possible) at a common conception of the conditions which would result from air attack, and (ii) elucidating points presenting difficulties in the drafting of particular schemes for which Departments were responsible.

Discussion of schemes with Departmental representatives had hardly begun before it was clear that much of the detailed planning depended on the answers to two questions. Would London's essential workers need to be prevented from leaving the capital? If so, what form of control should be adopted for this and other purposes? In discussion of a Ministry of Health report on *The Organisation of Medical Services in London* the chairman first expressed the view that a civil general staff

<sup>1</sup> pp. 26–27.

capable of organising the civil population would be an essential feature of air raid protection. This suggestion, with a number of other problems, was illuminated soon afterwards by the sensational event of the General Strike.

Depression in the coal industry had caused disputes which, after months of futile negotiation between the Government, owners and miners, ended in complete stoppage of the coalmining industry throughout the country. The day after the stoppage a Royal Proclamation was issued declaring a state of emergency, and the General Council of the Trades Union Congress ordered a general strike to begin forty-eight hours later. The state of feeling may be gauged from the fact that after a debate in Parliament on 3rd May, 'Members separated with a heavy heart, feeling that they were on the eve of a crisis comparable in its gravity to that which had existed at the outbreak of the war.'<sup>1</sup>

At midnight the railway and transport workers, printers, iron and steel and building operatives joined the miners in ceasing work, and the battle was joined. The country on the next day presented an unusual appearance, with practically no trains running, no public transport in the streets and no newspapers. But schemes prepared by the Government long beforehand were quickly put into operation. Under the authority of the Emergency Powers Act of 1920,<sup>2</sup> Britain was divided into eleven areas, each in charge of a Civil Commissioner with special powers for ensuring the maintenance of food supplies and essential services.<sup>3</sup> The Government had also organised Voluntary Service Committees throughout the country for the enrolment of volunteer workers. The response from the public was vigorous; in a short time many thousand volunteers were transporting food supplies by road, running trains and other services and acting as special constables. When first unemployed workers began to enrol freely and then strikers started to drift back in large numbers to work it became clear that the issue would be decided in favour of the Government unless the T.U.C. resorted to more drastic action. But the Council, after a half-hearted attempt to extend the strike, called it off on 12th May eight days after it had begun. The news was heard by Parliament and the public with much relief, and those responsible turned again to attempt to settle the coal industry's problems by negotiation.

The political issues of this strike are of less importance to this narrative than the machinery set up and the relationships established between the Government and the public under such unusual conditions. As an example of the latter factor, it will be recalled that on the second day of the strike the only newspapers procurable were the

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<sup>1</sup> *Annual Register*, 1926, p. 49.

<sup>2</sup> 10 and 11 Geo. 5, Ch. 55.

<sup>3</sup> These were under the general direction of a co-ordinating Cabinet Committee on which fourteen Departments were represented.

news-sheets of the Government and the Trade Unions (the *British Gazette* and the *British Worker*), and the Paris edition of the *Daily Mail*; later *The Times* and other morning papers appeared in much attenuated form. The Government, in addition, made effective use of a broadcasting system which was just emerging from its experimental stage into the state of adolescence represented by some two million receiving licences. The system was used both to inform the public of the daily course of events, and as a vehicle for the broadcast of important messages by the Prime Minister, Mr Baldwin, in person. It is perhaps not irrelevant to add that sections of the Opposition were severely critical of the use to which the Government put these new broadcasting facilities, and that this criticism had its share in the decision, taken later in 1926, to entrust broadcasting to a public corporation free from direct Ministerial and Parliamentary control.<sup>1</sup>

The A.R.P. Committee gave close attention to the lessons afforded by the Strike. They decided it had effectively demonstrated the need for a civil general staff, and that ways of adapting the machinery recently in use to A.R.P. purposes should be examined. The other main relevant lessons were as follows:—police organisation had worked well, with the numerous police forces of the country showing ability to reinforce one another at need and to operate as a national force. This organisation had shown a capacity for almost indefinite expansion; the 80,000 special constables enrolled before the strike had grown after ten days to 200,000, the 8,000 of these in the Metropolitan area had expanded to 56,000. The country possessed resources of unexpected size in motor transport and personnel with mechanical skill. An efficient telephone system was indispensable in an emergency, and the work of telephone staffs was highly praised by the chairman. Finally, in the absence of newspapers the broadcasting of news to the public was of great importance.

This autumn the committee's discussions with the Ministry of Health led to the conclusion that the questions of provision of accommodation for refugees from London, and of a scheme for treatment of casualties, should be dealt with by *ad hoc* committees. Also, the committee drew the attention of higher authority to the fact that London's Underground Railways depended for power supplies on two generating stations (Lots Road and Neasden) which used a non-standard frequency; in the event of either or both of these being put out of action it would be impossible to draw supplies from elsewhere. They therefore recommended consideration of undertaking the costly process of transforming the stations over a period of years to the standard frequency of 50 cycles.

In March 1927 the committee was faced with two matters which,

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<sup>1</sup> Royal Charter incorporating the British Broadcasting Corporation, *Wireless Broadcasting*, Cmd. 2756, 1926.

though not intrinsically of great significance, reintroduced important issues. Measures of defence against gas had continued to progress faster than schemes of defence in other spheres. Thus the Home Office had recently appointed an additional Inspector of Constabulary whose duties included making arrangements for police instruction in anti-gas measures. The Admiralty had appointed a special officer to work out anti-gas measures for the Portsmouth dockyards. The Chemical Warfare Research Department had been making experiments to determine how long persons could remain under certain conditions in a 'gas-proof' room; and had prepared a handbook, *The Medical Aspects of Chemical Warfare*, now on sale to the public. The allocation of responsibility for anti-gas measures had been determined. General guidance of the population in this matter fell to the Home Office, acting through the police; the treatment of casualties was the affair of the Ministry of Health, and decontamination must eventually be undertaken by the local authorities' sanitary organisations.

The first of the matters just referred to was a broadcast in February by Professor Noel Baker, on 'Foreign Affairs and How They Affect Us'. This, read in cold print at a distance of twenty years, appears as an attempt to rouse the British public to realisation of the horrors of future war, and to enlist its support for the disarmament negotiations at Geneva. The Professor quoted Mr Baldwin's speech to the Classical Association in the Middle Temple hall, 'Who in Europe does not know that one more war in the West and the civilisation of the ages will fall with as great a shock as that of Rome?' He painted a picture of gas attack from the air in another war and claimed, 'all gas experts are agreed that it would be impossible to devise means to protect the civil population from this form of attack'. The Chemical Warfare Research Department emphatically disputed the accuracy both of the details of the picture and of this general statement. They considered it unfortunate that statements of this nature should have been broadcast to the public, particularly after the Cabinet's decision that the time was not ripe for education of the public in defensive measures.<sup>1</sup>

The committee discussed whether to draw the B.B.C.'s attention to this talk. The Corporation, only a few months old, was then prohibited by the Postmaster-General's instructions from broadcasting 'matter on topics of political, religious or industrial controversy'; but the Post Office representative pointed out this did not mean that his Department was prepared to undertake censoring programmes. The committee, not wishing to incur the obligation to approve in advance all proposed broadcasts relating to their field of study, decided to take no action with respect to the talk in question.

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<sup>1</sup> See p. 28.

The second matter was a description in a French official publication of the air raid precautions being adopted in the Soviet Union. This country had established an 'Aviation and Chemistry Society' (*Aviokhim*) for training and propagating their citizens in air raid defence. An important feature of this body was the organisation in different centres of 'chemical detachments' to instruct civilians in methods of gas attack and anti-gas defence. The Chemical Warfare experts made the comment that, even if political reasons precluded instruction of the British population in these matters, steps should be taken to acquaint a wider circle of responsible authorities with the problems involved.

The committee agreed that further progress in many directions was no longer possible without some relaxation of the secrecy rules governing their inquiries. Confidential consultations with a few unofficial persons were no longer enough to cover the measures they wished to pursue. They therefore asked the Committee of Imperial Defence for authority to extend the scope of their consultations outside Government circles. They gave as concrete proposals for the way in which such extension might develop—(i) conferences (which had proved their value in the 1914-18 war) between central and local authorities and chiefs of fire brigades for the preparation of detailed arrangements for co-ordination of fire services in an emergency, (ii) training on a substantial scale of police and fire brigades in anti-gas measures, and (iii) consultations with local authorities about the form decontamination services should take. Such conferences, by involving an ever-widening circle of persons and organisations in the country, would further the aim of a 'slow, gradual and deliberate' education of the public.

These proposals were approved by the Cabinet in July. The committee noted with satisfaction in the autumn that relaxation of secrecy rules would enable Departments to carry preparation of schemes a stage further. They had already taken steps to create inter-departmental committees for various specific inquiries. They now drew the attention of the Committee of Imperial Defence to the growing concentration of industrial and commercial concerns in the London area, and suggested that the Principal Supply Officers Committee (one of the main sub-committees of the Committee of Imperial Defence) in making plans for the development of industrial activity under war conditions should rely as far as possible on undertakings outside the metropolis. The committee resolved to turn in the year ahead to closer examination of the central authority necessary for dovetailing schemes into one general plan.

While the committee was engaged in 1928 in examining this topic higher authority reached a decision of important bearing on the future of its work. It was in the summer of this year that the

Briand-Kellogg Pact, signed by almost every sovereign State, 'served as a magnificent advertisement of the pacific disposition of the world'.<sup>1</sup> The League of Nations Assembly hastened to implement the Pact with a 'General Act for the Pacific Settlement of International Disputes' open for the accession of all States. The Preparatory Disarmament Commission was framing a disarmament convention for consideration of a full-scale Disarmament Conference. In the optimistic atmosphere these events engendered the British Cabinet reaffirmed, for purposes of war preparation, that no major war was likely to occur for ten years.<sup>2</sup> This 'ten-year-rule', as it was called in official circles, had no beginning by the calendar but, like the rising sun, was new every morning. Until such time as the Government decided to revoke it, the possibility of major conflict was to be deemed on any given day as not less than ten years distant. This shifting yardstick (which was subject to annual review) was destined to remain in force for a number of years. It acted, it is hardly necessary to state, as a powerful curb on defence preparations of all kinds and on provision of public funds for defence. After a reference to this rule the chairman of the A.R.P. Committee stated that, as a result of financial stringency, the anti-gas training of the police and others had been postponed and provision for enlarging the Army Gas School was not being made in the 1929 Estimates.

## Problem of the Central Organisation

Now that satisfactory, if often slow, progress was being made with Departmental schemes it had become essential, the committee concluded, to define more closely the central A.R.P. authority.

They began by considering the organisation needed in war, and worked back from this problem to determination of what should be established in peace. The main issue lay between adherence to what has been called here earlier 'dispersal of responsibility' and the creation of a special Ministry to deal with all aspects of protection of the civil population and maintenance of vital services. The committee decided readily for the first alternative, favoured in their first report<sup>3</sup> and the basis, in effect, of their inquiries of the past three years. Experience in these had confirmed their view that allocation of specific duties to existing Departments was a better method than creation of an *ad hoc* body to deal with the whole problem. The principle of grafting A.R.P. functions on to existing machinery and resources, hitherto proved satisfactory, should, they considered, be followed in war. Many of the measures which would

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<sup>1</sup> G. M. Gathorne-Hardy, *op. cit.* p. 172.

<sup>2</sup> This assumption had first been made by the War Cabinet in August 1919, and had in effect governed the Estimates of the Defence Departments since that date.

<sup>3</sup> pp. 23-24.

have to be adopted in war were closely bound up with peace-time functions which would have to be continued whether or not a war existed. To attempt suddenly to divorce the purely war-time responsibilities of many Departments from peace-time ones would lead to much duplication and confusion. In strongly recommending that executive responsibility should rest with appropriate existing Departments, the committee did not overlook the possibility that in the stress of a crisis public demand for an A.R.P. Ministry might arise, and that political considerations might make it expedient to comply. Should such action become inevitable, the reorganisation would they thought be facilitated by their further suggestions.

If decentralisation of action to Departments became the guiding principle, there was clearly need for effective central machinery for the double purpose of co-ordinating policy and consultation over plans. Ultimate decisions on major policy issues would, of course, be taken by the Cabinet. But there would inevitably arise many day to day matters of less importance requiring policy decisions affecting more than one Department. To deal with such matters they proposed a committee of Ministers in charge of Departments most concerned with the problem, presided over in war by a Minister in the War Cabinet.

For the second purpose—consultation and co-ordination of Departmental plans—they found a model in the Chiefs of Staff Committee which had now become a permanent institution.<sup>1</sup> Members of this body, while still responsible as individuals for questions affecting their Service to their Board or Council, had a joint responsibility to advise the Committee of Imperial Defence on matters concerning all three Services and on Imperial defence. The committee suggested that a similar body be set up to examine and advise higher authority on all matters concerning ‘what may be described as air raids precautions services’. Composed of officials from Departments directing A.R.P. functions, and presided over by the Permanent Under-Secretary of State at the Home Office, this body would ensure that action proposed by any Department was in harmony with the general scheme. In matters of higher policy they would refer to the Ministerial Committee, but all executive action would continue to be taken by the Departments concerned.

The final principle of this plan was that decentralisation to Departments should be accompanied by centralisation *within* Departments. All functions concerning A.R.P. within any Department should be brought under the immediate direction of one official, preferably the Permanent Head or one of his deputies.

Having proposed this machinery for war, the committee advised it should be set up at once. They continued to be strongly influenced

<sup>1</sup> p. 12.

by the conception of a 'knock-out blow'. No time need elapse, they reminded the Committee of Imperial Defence, between the declaration of war and the delivery of the first blow, and, what was more important, this blow might be directed against national interests and activities which in the past had lain comparatively immune from attack behind the shelter of the country's armed forces. It followed that A.R.P. organisation must be ready to function immediately, and should be in active working operation in peace. A definite plan, embracing every aspect of the problem, must be prepared in advance and kept ready. This required that centralisation *within* Departments should include planning sections. The committee's conception of a 'civil general staff' begins to take shape as the body of officials jointly composing these planning sections in the Departments most concerned. If the proposal to set up this machinery at once was approved, transfer from peace to war would be effected with the minimum of dislocation and delay.

There was a further cogent reason for the proposal that Ministers should be included at once in the organisation. The A.R.P. Committee's chairman admitted that he was troubled by the fact that Ministers were not yet in close contact with the problems involved in this wide sphere of inquiry. After over four years' examination by officials and experts, with fair progress in surveying the whole field, collecting information and starting plans, a clear need had arisen for more positive Ministerial support.

It was breaking new ground to expect the Home Secretary, with his varied domestic responsibilities, to pay special attention in peace to foreign policy and defence. Yet his Department was, the committee reiterated, the one most concerned with the now formidable problem of protecting the civil population in war. The Home Secretary at this time, Sir William Joynson-Hicks,<sup>1</sup> it so happened, had developed interest in air warfare during 1914-18 and been a strong advocate of an independent air Service. He had served on the Civil Aerial Transport Committee (which laid the foundations of British civil aviation) and had agitated in Parliament and elsewhere for a stronger Royal Air Force. But it will serve as a reminder of the claims on the Home Secretary's attention to recall four controversies of 1928 with all of which Joynson-Hicks was prominently associated—the Shops (Hours of Closing) Act, 1928 which made certain restrictions of the unpopular war-time 'D.O.R.A.' permanent; the Representation of the People Act, 1928 (the 'Flapper Vote'); an agitation of serious proportions over the Metropolitan Police, and the stormy controversy over the new Prayer Book.<sup>2</sup>

<sup>1</sup> Born 1865; Home Secretary, 1924-29; cr. Visct. Brentford, 1929; died 1932.

<sup>2</sup> See H. A. Taylor, *Jix-Viscount Brentford* (1933).

The A.R.P. Committee recognised that Departmental officials would only be able to give 'a residual part' of their time and energy to studying war plans. But this defect in their scheme, they suggested, would be remedied by provision of an active secretariat with responsibility for seeing that progress did not languish, and that the reactions of the parts of the plan on one another were studied.

These recommendations were approved by the Cabinet at the end of January 1929. The new machinery, put into operation in the spring, was to bear responsibility for planning air raid precautions for the next six years. The committee, reconstituted as the 'A.R.P. (Organisation) Committee', with the same chairman and little change in its composition, remained the backbone of the planning organisation.

Before this reorganisation the committee had studied hospital accommodation, the location of lunatic asylums, the problem of shelters, and the enrolment and control of personnel for the various forms of 'anti-aircraft protection services'.

Discussion of the last important matter served to reveal the difficulties encompassing it, and the little progress so far made. Preliminary questions were still unsettled. For example, should some form of conscription be adopted? How were essential workers to be induced to remain at their posts? Was military or quasi-military control essential? The interpretation given to these services was still the wide one of almost everyone in the danger zones engaged in essential work; and the committee again emphasised the difficulty of keeping people 'on the job' and the need for some special degree of discipline. In agreeing that a form of mobile reserve would be needed to supplement and stiffen local labour, particularly at the opening of attacks, they turned for help to the War Office. Would the Army undertake to supply Territorials for this purpose, and to replace them later by special units on the lines of the Transport Workers' Battalions of the Great War? When the answer to this was discouraging, suggestions for forming such a reserve from special constables or from London medical students were considered and discarded. It was then agreed that the forming of a quasi-military organisation on the model of the St. John's Ambulance Brigade should be examined.

Other difficulties were well illustrated by the problem of shelters, responsibility for examining which lay with the Office of Works. This Department had produced various memoranda on the subject, the most recent of which by its Director of Works concluded: (i) it would not be possible to provide adequate protection for London's population in existing buildings, (ii) the cost of constructing special underground shelters on a large scale would be prohibitive, and (iii) the Tubes, though able to offer sound if limited

protection, would probably be needed more than ever in war for transport. This report then put forward an elaborate scheme for evacuating thousands of London's citizens by underground railway to the safety which its authors assumed would begin on the city's outskirts where the railways ended.

In this sphere material resources assumed outsize proportions. The amount of bricks, mortar and concrete needed to build adequate shelters and the cost of providing these would, the Office of Works considered, be far too large to be viewed as practical possibilities. The A.R.P. Committee had no alternative but to accept the experts' negative conclusions, while recommending more detailed study and experiment. But the financial aspect appeared a serious impediment not only to any ultimate scheme of construction but to the immediate requirement of conducting essential experiments. It will be recalled that the committee's first report had emphasised the need for these experiments, which the War Office had been asked to initiate.<sup>1</sup> Both experience in this field of inquiry and the funds with which to begin experiments were lacking. The Service Departments alone possessed a measure of these essential ingredients of progress. But the interests of each of these in the effects of air bombardment differed from those of the other two and still more from those of the civil Department, and machinery to co-ordinate experiment and research seems to have been almost lacking. Stalemate over shelters early in 1929 was further aggravated by a clear, and apparently irreconcilable, conflict between the need to send the public underground for protection against high explosive and the need to keep them above ground for protection against gas. Practical experiment in defence against gas could in addition be conducted more cheaply and unobtrusively than experiment into the destructive powers of high explosive missiles.

### Publicity, Personnel and Schemes, 1929-1932

The reconstituted or 'A.R.P. (Organisation) Committee' met in late April with terms of reference identical with those of 1924, except that concentration of the inquiry on London now received some formal recognition.<sup>2</sup> It is apparent that this body of officials had much continuity. Its familiarity with the complicated issues involved was of obvious advantage as plans approached nearer some practical application.

The next six years saw the collapse of the optimism prevailing in

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<sup>1</sup> p. 22.

<sup>2</sup> In the remainder of this chapter the Ministerial (or Policy) Committee will usually be called the Ministerial Committee, and the reorganized Departmental or official Committee will be called the Organisation or simply the A.R.P. Committee. See pp. 34, 39.

1925–29. The United States stock-market ‘crash’ of October 1929 began an era of world-wide depression; and Mr MacDonald’s minority Government soon found itself faced by grave problems, which issued in August 1931 in the formation of a National Government. The general election of that October returned the Conservatives in force, and reduced Labour to a small embittered Opposition. This confusion (as it must be regarded) of domestic politics had its consequences in foreign policy and defence preparations. The reaction of British parties and public to the growth of aggressive nationalism abroad was for long mainly one of bewilderment, and ‘its old gift of political relevance appeared to have abandoned the nation.’<sup>1</sup>

A stage had been reached in planning at which progress depended on more relaxation of the secrecy rule. Some schemes could be developed no further without enlisting co-operation of the public. Financial resources for development could not be procured without Parliamentary and public discussion. Also, some awareness among the public of the potential threat to Britain and the steps being taken about it had throughout been regarded by the A.R.P. Committee as an essential precaution against panic. They attached such importance to this aspect of the problem that they made several attempts over the next four years to gain Committee of Imperial Defence approval for the introduction of more publicity. That these met with only moderate success was due to the trends of policy and opinion during the early ‘thirties of which mention has just been made.

The Geneva Gas Protocol, aimed at prohibiting gas and bacteriological warfare, had been signed by most European countries in 1925 and was about to be ratified by British and Dominion Governments. This instrument referred only to offensive use of poison gas, and did not restrain signatories from defensive preparations and research or from commercial traffic. In considering the situation created by Britain’s ratification, the committee recognised that production of poison gas in quantity and secrecy in peacetime was relatively easy. But, while it would be unwise to decrease Britain’s research and defensive preparations, the Protocol suggested the course of keeping these within existing bounds, and of reaffirming the original view that use of gas in the first stages of a war was unlikely.<sup>2</sup> The further development of anti-gas schemes would require the publicity now undesirable for reasons of high policy. To halt expansion in this sphere for the time being would enable the committee to concentrate on other problems (notably shelters), the size of which were such as to provide ample work.

<sup>1</sup> K. Feiling, *Life of Neville Chamberlain* (1946), p. 198.

<sup>2</sup> See p. 26.

particular, the main shocks administered to international harmony from the Continent and leading statements by the British Government about defence preparations.

The months before issue of the 'first circular' had produced important examples of these two types of event. Early in March the National Government published a White Paper on Defence which, after declaring that Britain's 'desire to lead the world towards disarmament by our example of unilateral disarmament has not succeeded', began a programme of general rearmament.<sup>1</sup> It would be interesting to speculate whether this programme made a greater impact on British opinion than the action taken soon afterwards by Hitler. On 9th March Germany notified foreign governments that she possessed an air force—an act less important for the information it conveyed than for its character as 'the first open repudiation by Germany of her treaty obligations'.<sup>2</sup> Two weeks later conscription was reintroduced in the Third Reich.

Though the existence of a German air force had been known in Britain, there was difference of official opinion over its size and rate of growth. During a debate in November Mr Baldwin had flatly contradicted Mr Churchill's assertion that Germany's air force was approaching equality with our own. The effect of this reassuring statement, according to one historian, was the direct opposite of the urgent request of the Chiefs of Staff early in 1934 that the people should be roused from 'the state of moral disarmament to which persistent and almost unopposed peace propaganda had reduced them', and that they should be educated to see the need for the financial sacrifices required for defence. In the spring of 1935 the Government became convinced that expansion of Germany's air force was a bigger menace than they had hitherto supposed. On 22nd May Mr Baldwin told the House that he believed his previous statement about the future strength of Germany in the air to have been 'completely wrong'; and said that Hitler had recently told the Foreign Secretary and Mr Eden that Germany had already achieved parity with Britain.<sup>3</sup>

The ordinary citizen was only momentarily alarmed by these revelations. The disease already referred to, fear of another war, was slow in spreading and was being resisted by powerful injections of what the Chiefs of Staff had called peace propaganda. A few weeks after Mr Baldwin's admission, the 'Peace Ballot', a questionnaire initiated by the League of Nations Union, obtained over 11,500,000 signatures. The support for this document, though susceptible to various interpretations, at least showed how strong was the faith

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<sup>1</sup> *Statement relating to Defence*, Cmd. 4827, 1935.

<sup>2</sup> G. M. Gathorne-Hardy, *op. cit.*, p. 393.

<sup>3</sup> H. of C. Deb., Vol. 302, Cols. 367–8.

still reposed in the League (or in what was called 'the system of collective security') as an instrument for preventing war.

Early in June 1935, Mr MacDonald retired from the Premiership in favour of Mr Baldwin. Reconstruction of the National Government included the exchange by Sir John Simon of the Foreign Office for the Home Office; so that it fell to this Minister to present to Parliament the Estimates for 1935-36 which included the first item (£92,000) on account of A.R.P. The motion for approval of these was made on 16th July, a week after issue of the circular.<sup>1</sup> The Home Secretary, though recalling that he had first borne responsibility for this Department twenty years earlier 'on the day on which the first *Zeppelin* visited London', made no allusion either to the circular or to the new A.R.P. functions of his Department. A good deal of interest in the matter was, nevertheless, expressed in debate. Several Opposition members alleged that issue of the circular was further proof of the inadequacy or insincerity of the Government's efforts for peace, and the problem of incidence of financial responsibility was raised.

More detailed description of the 'first circular' may take the form of elaboration of the three main features mentioned at the opening of this chapter. As a statement of Government policy, the document received an amendment of some significance after leaving the Ministers most concerned. The earlier version had stated, 'it must be assumed that the scale of attack would greatly exceed anything which was experienced in the last war', and that the attack 'would no doubt be directed mainly against the large centres of population and industrial activity, with London as a principal objective'. These passages were replaced by a general assurance that the Government strongly repudiated indiscriminate bombing of civil populations, and would continue to make every effort to avert war. The public was, however, warned that if war came it would be 'impossible to guarantee immunity from attack' by enemy aircraft; and that use of poison gas was a possibility which could not be disregarded.

The Government, the circular continued, would issue general instructions, give technical and administrative advice, provide stocks of certain anti-gas equipment and give some financial assistance over hospital equipment and stores. A straightforward refusal was announced to provide money towards construction of public bomb-proof shelters. Reasons (already familiar to readers) for this decision were stated, and occupiers of premises were told that effective protection could be obtained against blast and bomb-splinters at comparatively small cost. Apart from undertakings to

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<sup>1</sup> H. of C. Deb., Vol. 304, Cols. 887-1018. The document had not been made available to Members in the Vote Office, with the result that many of them had not read it.

all the Counties and nearly all the County Boroughs of England and Wales, and the Counties and Burghs of Southern Scotland.

The outcome was to encourage some authorities to take preliminary steps, and to acquaint the Department with the views of representative persons up and down the country on the Government's proposals, both general and particular. This two-way process, based mainly on the Inspectors' activities, had much importance in the phase with which this narrative is now concerned. Discussion was undertaken, for example, with local authorities over plans for creating two new voluntary local services of 'Gas Detectors' and 'Street Wardens'.

On the general character of the Government's plans it was inevitable that local bodies should show special interest in the topic of the incidence of expenditure. The Department distinguished between expenditure in peace and that required in an emergency or just before an emergency. It assured local representatives that the share of the former falling on them would be comparatively slight, and that should an emergency arise a fair division of the financial burden would be reached. Reactions to such assurances naturally varied. Some authorities were ready to take preliminary steps in spite of the ambiguity of the position. The attitude of the L.C.C., however, was reported by the Department as typical of a large section of opinion, 'which has promised co-operation in so far as it coincides with the normal responsibility of the local authority for the health and well being of their citizens; but subject to the *caveat* that any expenditure incurred must rest on the central Government'.

Readiness of local authorities to take action also hung on their attitude towards the whole rearmament problem, and in that manner they reflected the variety of opinion on this topic still dividing the nation. These conferences had barely begun when Italy, by invading Abyssinia, gave another blow to confidence in the League of Nations. After the General Election of November 1935 Mr Baldwin's National Government had returned to power with a large majority; but the Prime Minister had diluted his promise of rearmament with considerable assuagement of pacifist opinion. The swift public reaction to the Hoare-Laval Peace Plan had shown how many still clung to faith in the 'collective security' they thought was embodied at Geneva. As Edward VIII's reign began, the Cabinet was considering the accelerated programme of rearmament referred to earlier in this volume.<sup>1</sup> But the pattern of events of the previous spring was about to repeat itself. A few days after publication in March of a new White Paper Hitler took advantage of the Italo-Abyssinian war to march into the Rhineland.

Shortly before this event the Government had announced their

<sup>1</sup> pp. 57, 61-62.

intention to establish a Civilian Anti-Gas School, and some discussion of gas warfare had ensued.<sup>1</sup> The Opposition, while acknowledging the need for air raid protection, had used the occasion to criticise the Government's foreign policy as 'one of despair'. On the larger stage offered by discussion of the defence programme, it moved rejection of the White Paper, chiefly on the ground that its policy was 'unworthy and ambiguous' and paid only lip service to collective security. Criticism at Westminster of the rearmament proposals as nationalistic and 'war-mongering' found an echo in, and echoed, many sections of opinion in the country. To the reluctance of many local authorities to embark on A.R.P. plans before the financial implications were clearer, was added the opposition of others towards any steps of rearmament.

The Department decided to ask certain authorities to work out schemes in detail, with a view to finding by trial and error the best lines of development.<sup>2</sup> The conception, held throughout the previous phase of planning, of the 'ever-widening net' was now to be applied in practice. The approach was to be made first to selected bodies (e.g., some local authorities, police forces and the St. John Ambulance Brigade) and individuals (e.g., local officials and public utility managers) in the hope that these would pass on their knowledge to a progressively widening circle. An important share in promoting this policy was to fall to the Anti-Gas School, which began to hold courses on 15th April 1936.

Eastwood Park, Falfield, an estate of some 200 acres mid-way between Bristol and Gloucester, had been bought by the Government for this school, which was to include practical training in passive defence. The Chief Instructor, Major F. W. Ollis,<sup>3</sup> had been responsible for starting the Army Gas School at Winterbourne Gunner. But training at Falfield 'differed in its emphasis and angle of approach from military anti-gas training, and the new school had therefore to evolve a new syllabus and scheme of instruction.' To the reasons already mentioned for concentration on gas warfare others had now been added. Gas was the risk most prominently associated in the public mind with future air attack, as was demonstrated a few weeks before the school opened by British reaction to Italy's use of mustard and other gases against Abyssinia.<sup>4</sup> In addition, some supplies of anti-gas equipment, introducing a realistic element into A.R.P. training, were becoming available.

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<sup>1</sup> H. of C. Deb., Vol. 309, Cols. 703-731, 27th February 1936.

<sup>2</sup> Nottingham deserves special mention as having acted from an early stage as a field of practical experiment in organisation.

<sup>3</sup> Remained Chief Instructor until July 1947.

<sup>4</sup> According to the *Annual Register*, 1936 (p. 27), 'feeling in England could hardly contain itself when the Italians were reported to be using poison gas against both soldiers and civilians'.

extending the protective equipment used during 1914-18. It will be recalled that by 1935 the Committee of Imperial Defence had reached certain decisions in this sphere.<sup>1</sup> Two types of gas-mask, the General Service and Special Service, and protective clothing would be supplied to persons whose duties might require them to enter and remain in gassed areas. Provision for respirators and a contribution to research by the Chemical Defence Research Department had accounted for more than half the original total of £100,000 authorised for A.R.P. expenditure. Some months after the A.R.P. Department's formation an adequate preliminary design for a respirator which could be mass-produced at a cost of about 2s. apiece had been evolved, and the Government had undertaken to issue this free to all citizens in the danger areas.<sup>2</sup>

The obligation was novel, since in no previous war had a Government had to contemplate the possible death or injury of so large a proportion of the civil population, and damage to so much civilian property, by one weapon. The memorandum on A.R.P. requirements which the Department had sent to the Defence Requirements Committee in October 1935 contained these items—respirators, a device for protection against gas of children under five, protective clothing, bleach powder and hospital equipment. Of the estimated cost of providing these during 1936-39 of £5,540,000, the three types of respirator accounted for £4,520,000. Requirements of the General Service and Special Service masks were estimated at 400,000 in each case and would cost some £520,000. For the civilian mask, the figure of 30 million, arrived at by excluding only areas in the extreme west, south-west and north-west of Britain in which the risk was most remote, was proposed as a minimum. If the population of these areas was included, the requirement would be 40 million and the cost £4 millions.

After authority had been given to proceed on the basis of 30 million of the civilian masks and 400,000 of each of the others, a sub-committee of the Committee of Imperial Defence examined the production problem. The General Service mask was produced under War Office arrangements which included an assembly factory at Leyland in Lancashire, and it was agreed that A.R.P. requirements could be met from this source. The War Office undertook to supply the Department's demand for the Special Service type, but only until such time as an emergency arose. The Home Office had therefore to solve the problems of producing its war-time requirements of this second type and the 30 million civilian masks needed by March 1939, and providing for replacement of these and their continued supply in war.

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<sup>1</sup> pp. 47-48, 51.

<sup>2</sup> pp. 61, 70.

The designers, the Chemical Defence Research Department, secured provisional Home Office agreement that they should aim at perfecting design of the civilian mask by the end of 1936.<sup>1</sup> In addition to other technical problems involved, this design had to allow for resistance to deterioration during long periods of storage. During the summer of 1936, however, the Home Office expressed its satisfaction with the design and approval was given by the Defence Policy and Requirements Committee to a speeding up of the programme, by which 5 million civilian masks would be produced by the end of that year and the balance by the end of 1937.

The solution to the problem of an assembly factory for these masks was found in a disused cotton mill at Blackburn, not far from the War Office factory at Leyland. This choice was mainly due to the fact that the Home Office had obtained authority to employ the firm managing the War Office establishment, the only one in the country with this type of experience, as its agents in the new undertaking.<sup>2</sup> The mills passed into Government ownership on 13th July, and the work of dismantling weaving machinery and installing the new equipment proceeded. The factory began assembly of the civilian mask (in three sizes) on 30th November. By the next February it had assembled three quarters of a million, and achieved a weekly production rate of a quarter of a million. Authority was obtained in that month to raise the programme to a total of 40 million masks to be produced by the early summer of 1938. Mention has been made earlier of the formal opening of the Blackburn factory on 12th January 1937 by Mr Geoffrey Lloyd.

The new mask consisted of a facepiece, a container which held the two filtering media, an india rubber band to connect these two parts, and an india rubber non-return valve for the inner end of the container. The variety of components involved was considerable, and the total numbers of some items required were astronomical. The facepiece, for example, included vulcanised sheet rubber, cellulose acetate eyepieces, cotton webbing, slides, buckles, safety pins and other materials. Ninety million safety pins and the same number of slides were needed and thirty million of the other items. The complete container included canister bodies and ends, wire diaphragms, cotton pads, muslin diaphragms, filter pads, springs and activated charcoal. From ninety to thirty millions of these individual items were necessary, and 4,000 tons of activated charcoal.<sup>3</sup> Contracts for the facepieces were placed with a number of private firms for delivery of the article complete. The components of the

<sup>1</sup> Some General Service respirators had been sent to Malta and Aden for protection of the civil populations during the winter of 1935-36.

<sup>2</sup> J. E. Baxter & Co Ltd, of Leyland.

<sup>3</sup> For a fuller description of respirators and other anti-gas equipment see A.R.P. Handbook No. 1, *Personal Protection against Gas*.

of the Civilian Duty type, mainly for sale to industrial concerns, and with respect to these the certification mark system filled a useful purpose.

A final matter which concerned gas-masks belongs perhaps more properly to the topic of public reactions to A.R.P. Early in 1937 some scientific workers at Cambridge University, who described themselves as the 'Cambridge Scientists' Anti-War Group' and their function as that of acting as 'a technical and advisory body to national and international peace movements', published a book attacking the Government's A.R.P. plans.<sup>1</sup> This body had studied the official advice about the 'gas-proofing' of rooms, the civilian mask, and extinguishing incendiary bombs, and then conducted some experiments. It claimed to have shown that the measures officially proposed were ineffective or inadequate, and implied that these constituted deception of the public. The mask they had put to various tests was of a 'civilian type' bought on the open market, and not the official article. And their book's declared aim of offering a critical examination of A.R.P. measures was faithfully followed, to the exclusion of any positive counter-suggestions.

It has been noticed that as 1937 opened the Government was taking steps to make A.R.P. plans more widely known to the public;<sup>2</sup> and this deliberate challenge found a sympathetic echo in various quarters, and caused it some concern. Questions about the Cambridge experiments were asked in Parliament, for example on the occasion of the announcement of the new Wardens' Service; sections of the Press began a critical campaign, and questions were put to officials trying to build up A.R.P. services over the country. The Government's reply was that the experiments were academic (in the sense of removed from reality), and based on fallacious assumptions about the conditions likely to be met in actual warfare.<sup>3</sup> In spite of pressure the authorities refused to engage in technical controversy with the scientists in question and within a few months the agitation subsided. At the close of the year, however, a report on the official experiments (in supervision of which the Chemical Defence Committee had been helped by eminent scientists not in Government employment) was circulated to local authorities and otherwise made public.

While it can be argued that the scientific details and administrative repercussions of this affair have only small historical significance, interest attaches to the attitude of this group of scientists and their supporters to rearmament. The Group, in spite of its title, did not in their book attack general preparations for war, but only these

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<sup>1</sup> *The Protection of the Public from Aerial Attack* (Left Book Club Topical Book, Victor Gollancz Ltd, 1937.)

<sup>2</sup> p. 71.

<sup>3</sup> H. of C. Deb., Vol. 320, Col. 1348, 18th February 1937.

particular preparations—an ambiguous position which was perhaps not uncommon in 1937.

After the mask, the main item of personal anti-gas equipment was clothing to protect the body against mustard and other blister gases. By the end of 1936 the A.R.P. Department had obtained from the War Office and issued on loan for training some 6,000 suits of protective clothing of the kind then designed for the Fighting Services. This pattern, however, suffered from two serious defects—it was too cumbersome to be worn except for a very short time by anyone engaged in heavy work, and it deteriorated in storage. The Chemical Defence Research Department was undertaking research into the impregnation of uniforms, which might provide the solution for the 250,000 sets of clothing required for A.R.P. Services. This method, in turn, met with difficulties. During 1937 the possibility was being examined of producing suits of anti-gas clothing by proofing various fabrics with linseed oil.

The last of the main items concerned with gas defence, large supplies of which had to be arranged for well in advance, was bleach powder for cleansing and decontamination. The Department's estimate for its war-time need of this article was 1,500 tons a week, and when the requirements of the Service Departments were added the total much exceeded existing British production. There was also the complication that commercial bleaching powder deteriorated rapidly in storage. In 1937, however, the War Office decided to erect a factory to produce chlorine and agreed to furnish the supplies of bleach required for A.R.P. purposes.

In the Department's memorandum to the Cabinet on *Financial Aspects of Air Raid Precautions* of March 1937 authority was sought to buy the most elementary means of protection against high explosive bombs—namely, sandbags. A rough calculation had estimated the number of sandbags for which demand might arise on the outbreak of a war as one thousand million. On the assumption that sandbags or paper bags could be mass-produced at a flat rate of 1d. each, the total cost would be about £4½ millions; and the Department asked permission to proceed to buy over a number of years half the quantity just mentioned, or five hundred million. By the time this matter was discussed by the Defence Policy and Requirements Committee the estimated cost of supplying this article had risen considerably, and it was clear that provision of the quantity suggested would put some strain on the jute or paper industries. The Committee therefore instructed the Department to make a preliminary purchase over six months of about forty-two million bags, and to investigate the possibility of obtaining further supplies made from paper.

Production of these different types of anti-gas equipment owed

At the end of the First World War English fire-fighting services were in a stage of transition from the era of the horse-drawn steam fire engine to that of the self-propelled motor-driven pump. But if use of mechanical equipment was becoming more general, the organisation may fairly be described as archaic. The fire brigade powers were spread over a great number of separate authorities,<sup>1</sup> most of whom were responsible for very small areas and had slender resources. No authority except the L.C.C. was under any statutory obligation to maintain fire services of any kind: no standards of efficiency had been laid down and such arrangements as there were for mutual support were generally on a small scale and inadequate. The Royal Commission on Fire Brigades and Fire Prevention which had reported in 1923,<sup>2</sup> had made recommendations for improving fire brigade organisation, but so far the Government had been unable to find time for legislation.

The Home Office was the Department concerned with problems of fire prevention in general; and it possessed a Fire Adviser who, as noted earlier, had furnished the A.R.P. Committees with information in the years before 1935. The first A.R.P. circular of July 1935 had referred to a forthcoming inquiry into the fire brigade services of England and Wales, and the report of this (Riverdale) Committee was published a year later.<sup>3</sup> The Committee dealt with both peace-time and emergency problems. On the former, it supported in the main the recommendations of the Royal Commission, though legislation did not follow until 1938. The work of preparing both the new legislation and the emergency measures was entrusted in October 1936 to a new Home Office division, in charge of the Assistant Under-Secretary of State who directed the work of the Police Division, Mr Arthur Dixon.<sup>4</sup> The circulars laying the foundations of the emergency measures were issued in February, 1937. These, it must be noted here, were more liberal than the A.R.P. circular regarding financial assistance to local authorities.

On the question of how the public might co-operate with fire brigades, experience of fire attacks on London and elsewhere during 1914-18 was no longer of much technical relevance, owing not only to aircraft development but to evolution of the incendiary bomb, and particularly of the so-called 'kilo magnesium (elektron)' type. In the summer of 1935 H.M. Chief Inspector of Explosives,

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<sup>1</sup> In England and Wales, they were the London County Council, the Town and Urban District Councils and the Parish Councils and Parish Meetings, and in Scotland the County Councils and Town Councils.

<sup>2</sup> Cmd. 1945.

<sup>3</sup> *Report of the Departmental Committee on Fire Brigade Services*, Cmd. 5224, 1936.

<sup>4</sup> This work is fully discussed in Chapter VI.

Lt.-Col. R. A. Thomas, and the Home Office Fire Adviser, Lt.-Col. G. Symonds, had begun experiments with the Research Department at Woolwich into the effects of and defence against this type of bomb. It is important to note that from the outset these experiments embraced investigation of methods (including appliances) by which householders and factory staffs, as well as trained fire brigades, might extinguish or remove such missiles.

Early in 1936 two sub-committees were formed, under the chairmanship of H.M. Chief Inspector of Explosives and including representatives of the Service Departments, one being concerned with the incendiary bomb and the other with the problem of fires in oil depots. Trials were continued under their supervision at Shoeburyness, Woolwich Arsenal and elsewhere. Later that year these trials became more realistic as a result of use of incendiary and other bombs by German and Italian aircraft supporting General Franco in the Spanish Civil War. Specimens of these weapons, as well as a detailed report on *The Effects of Aerial Bombardment and Emergency Measures taken by the Municipal Authorities in Madrid*,<sup>1</sup> were furnished by an A.R.P. Department Inspector who visited Spain in the winter of 1936-37.

A demonstration of how to deal with the light incendiary bomb had been included in the Anti-Gas School curriculum in November 1936; and in February 1937 the Home Office Fire Adviser staged a demonstration at Barnes at which bombs were successfully controlled and fires extinguished by teams of girls with only short training. At an exercise held later at Southampton a group of air raid wardens carried out this function with such success that the Department concluded it must aim to train all householders in the handling of incendiary bombs. Various ways of doing this were being discussed during the latter months of the year.

Experiments relating to modern weapons of attack were accompanied during 1935-37 by others relating to different problems, notably warning and lighting systems. Attention to these must, however, be deferred until some miscellaneous topics have been mentioned.

The Defence Requirements Committee had emphasised in November 1935 the dangers to which Britain's vital industries were liable under air attack. The next March the Committee of Imperial Defence approved the appointment of a sub-committee of the Home Defence Committee to investigate and co-ordinate all methods of protecting 'vital points'. These comprised factories and other places of special war importance; and the protection to be examined covered not only passive defence but active defence and the problem of location in relation to defence. The specialised and prolonged

<sup>1</sup> Prepared by the Home Office (March 1937).

accepting the distinction between 'peace-time' and a warning period, they eliminated definitions as to how long this warning period would last. They proposed the Home Secretary should be authorised to open negotiations with the local authorities on the general basis of a Government contribution of 60 per cent. of approved expenditure, but that no public announcement of the Government's intentions should be made until after these negotiations. The question of compensation for injury was reserved for consideration elsewhere, and that of war-time expenditure was left for further discussion. The proposals regarding vital industries and the purchase of sandbags were referred elsewhere.<sup>1</sup>

The issues these conclusions raised were considered soon afterwards by the Cabinet, which decided that negotiations with local authorities should be suspended while re-examination was made of Departmental responsibility for air raid precautions. A sub-committee of the Committee of Imperial Defence was accordingly formed, under the chairmanship of the Permanent Secretary to the Treasury, Sir Warren Fisher,<sup>2</sup> with wide terms of reference. This was to examine existing proposals about the nature, scale and distribution of A.R.P. services, including hospital and fire brigade services; to report upon distribution of responsibility between the central and local authorities and (if desirable) voluntary organisations, and on any necessary adjustments of Departmental responsibility and organisation.

The findings of the Warren Fisher Committee, submitted to the Cabinet at the end of June, formed one of those surveys of the essentials of the problem which constitute a landmark, at least for the historian. The committee began by defining the aims of air raid precautions services as follows: (a) to maintain the morale of the people, (b) to ensure continued functioning of the activities vital to the effective prosecution of the war and the life of the community, (c) to reduce to a minimum the destruction of life and property likely to be produced by air raids. They pointed out that translation of these principles into administrative action necessarily involved some apportionment between the claims of the passive and active defences. They suggested that it should be recognised from the outset that it was impossible to secure anything approaching 100 per cent. security by passive defence, and that, in spite of this fact, it was essential to ensure a reasonable degree of protection in the light of the weight of attack likely to be encountered.

The committee re-examined the hypothesis—the scale of attack—which underlay all their deliberations. As already observed, the

<sup>1</sup> See pp. 62, 76, 82.

<sup>2</sup> Born 1879; Permanent Secretary to the Treasury and first 'Head of the Civil Service' 1919–38; subsequently C.D. Regional Commissioner for the North-West and Special Commissioner for London; died 1948.

Air Staff had raised their estimate of the weight of bombs which an enemy (now Germany) might drop on Britain during the first stages of an attack from 150 tons *per diem* to no less than 600 tons. The committee proceeded, as their predecessor of 1924 had done, to question the experts and then to accept their hypothesis.<sup>1</sup> The estimate of over 600 tons of bombs *per diem* during the first few weeks (which took account of Britain's various potential forms of counter-offensive) also embraced the possibility of a special bombing effort on the part of the enemy in the first 24 hours which might amount to 3,500 tons. Consideration had to be taken not only of this greatly increased weight of attack but of new methods of attack for which past experience afforded no precedents. The measure offered by the accepted air raid casualty figure of 1914-18 (50 per ton of bombs, 17 of which were killed and 33 wounded) was subject to the *caveat* that modern bombs were more effective. The committee pointed out that an arithmetical computation on this basis for the scale of attack at 600 tons *per diem* would indicate casualties of the order of 200,000 a week, of which 66,000 would be killed. The possibility of very heavy attack in the first weeks of a war led them to the question of evacuation. This had not, owing to the uncertainty of its financial implications, been included in the Home Secretary's memorandum.

Air raid precautions, the committee stated, were designed to meet two distinct but concurrent sets of conditions—physical damage to life and property, and panic and disorganisation. To this second (mainly psychological) danger they attached the same high importance as their predecessors. Maintaining the people's morale would, they considered, be best achieved by frank explanation of the risks, combined with making the people realise, through participation in measures designed to meet these risks, that the problem had been thought out by the Government with the aim of providing all the protection reasonably possible.

As regards the scale and distribution of A.R.P. services, the committee concluded that no attempt should be made to apply the 4-day warning period rigidly but that measures should be carried far enough to be completed within a relatively short time. They, nevertheless, attached much importance to the grading of the country into areas based on their presumed liability to attack.<sup>2</sup> They concluded that the most basic financial proposals of the Home Secretary's memorandum should be accepted in principle

<sup>1</sup> The new estimated scale of attack had been referred to the Home Defence Committee, and was not approved by the Committee of Imperial Defence until 28th October 1937.

<sup>2</sup> The A.R.P. Department had now divided Britain into five grades 'tapered' in such a way that a district in grade 5 might only receive one-seventh of the protection afforded to a district in grade 1.

black-out, whatever the difficulties of its individual application, had much general support.<sup>1</sup>

## Progress at the Centre:

### (ii) Anti-Gas Equipment, and other Supplies

The 25 million civilian gas-masks accumulated by the opening of 1938 were, from various points of view, one of the most tangible assets of the A.R.P. Service. The assembly of containers at the Blackburn factory (still working double shifts) and contractors' deliveries at Regional Stores of facepieces, then 'canned' in nitrogen for long-term storage, were fulfilling the programme for completion of 40 million masks by the coming summer.<sup>2</sup> In view of official recognition that no part of Britain could be regarded as completely immune from attack, and the delicacy of attempting discrimination between areas in this matter, the promise to supply a mask to every citizen in danger areas now involved supplying the whole population of some 44 million souls. Owing to the difficulty of estimating the numbers required of the three different sizes, the need to allow for population shifts during holidays and other factors a reserve of 20 per cent. (8.8 million masks) was decided on. While informing the Committee of Imperial Defence that 52.8 million masks would be needed, the Department confined its immediate request to approval for production of 45 million masks by the end of 1938.

Early in April the Department gave local authorities a detailed account of its plans for Local Respirator Stores, Respirator Distributing Depots, the preliminary wardens' census of numbers and sizes of masks, and the final assembly and distribution to citizens.<sup>3</sup> The Government, the reader will recall, had been working on the assumption that final distribution might have to be carried out in hours rather than in days; and the Department considered that this necessity for speed called for elaborate physical arrangements. For most scheme-making bodies, however, preparations on the scale suggested were far from simple. For example, a town of 150,000 persons, such as Southampton, was asked to provide 5 Local Respirator Stores, conforming to various requirements of space, lay-out and temperature and evenly spaced over its area, and 35 to 40 Distributing Depots; and the siting, and financial arrangements for adapting or acquiring these buildings, would need central approval.

During the Sudetenland crisis the possibility of immediately

<sup>1</sup> e.g., H. of C. Deb., Vol. 337, Col. 383, 16th June 1938.

<sup>2</sup> pp. 77-80.

<sup>3</sup> H.O. Circular and Memorandum of 4th April 1938; p. 130.

issuing civilian masks from Regional Stores to the local authorities was considered and discarded. The gas-mask (it was clear) was a defensive weapon with a double moral edge; if its existence gave citizens confidence in the effectiveness of the Government's preparations, its general distribution might be interpreted as meaning the hour for its use had struck. The course taken, once this particular threat had subsided, was to emphasize anew to local bodies the need for rapid completion of plans and to express earnest hope that the larger authorities at least would be able to take delivery of civilian masks by the end of August.<sup>1</sup> The central scheme issued in April was to be regarded as an ideal arrangement, modifications of which would be sympathetically considered. Arrangements made by some authorities with industrial concerns for help in the task of final assembly were quoted for emulation, and instructions and tools for this work were soon to be issued.

Effective response to this request, and to the scheme for wardens' census of numbers and sizes, was likely to take time. The census was only to be made by wardens who had 'undergone the approved anti-gas training', of whom by the middle of 1938 there were some 140,000 unevenly spread throughout the country. It is not surprising that, as the holiday season opened, few scheme-making bodies had made much progress in this sphere.<sup>2</sup> The A.R.P. Department, in the meantime, had been forced to conclude, after various experiments, that its calculations of the proportions in which the three different sizes of mask would be needed were most approximate. More satisfaction was obtained from the evidence afforded by trials at Bristol in this summer that the civilian mask could be worn for half-an-hour 'without discomfort' by persons carrying on a variety of normal tasks. By the middle of the year some 360,000 civilian masks had been issued to local authorities for use in the census, and 160,000 had been distributed for training.

Among reasons for the decision not to issue civilian masks to local authorities in May was the fact that means of protecting small children and babies against gas attack were still in the experimental stage. The provisional design for a 'baby bag', or anti-gas helmet, evolved by the end of 1937 was subjected to numerous later tests, which caused modifications and acceptance of an improved device in August.<sup>3</sup> The problem, presenting much smaller technical difficulty, of evolving a 'small child's respirator' for children between two and five had by this date only reached the stage of a tentative design.

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<sup>1</sup> H.O. Circular of 6th July 1938.

<sup>2</sup> By the end of July the City of Westminster had received and stored all their respirators and opened an experimental fitting centre. Many London Boroughs, on the other hand, still had few wardens either enrolled or trained.

<sup>3</sup> p. 80.

Now that supplies of the civilian mask were assured the Department's Supply Branch paid chief attention to the various items of anti-gas equipment needed for the General Services, Police and Fire Brigades. The appointment in January 1938 of a new Director of Supply was the occasion for the Branch, which had borrowed most of its chief officials from the Admiralty, to be given an establishment and made an integral part of the Home Office. As with other branches in the period from the Act to the 'September crisis', the expansion in its staff was much outpaced by growth in the volume of its work. This included decisions with the Chemical Defence Research Department and other expert bodies on designs for the novel requirements of A.R.P. equipment, and arrangements for provision, usually on an unprecedented scale, of a large variety of materials and components. Contracts for anti-gas clothing were placed through the Admiralty contracting department, and those for most other supplies through the Directorate of Army Contracts of the War Office.

The question of mobilisation equipment for the Services just mentioned was brought by the A.R.P. Department before the Treasury Inter-Service Committee in May. With the exception of steel helmets, all the items involved were anti-gas equipment, namely—Service and Civilian Duty respirators, heavy and light anti-gas suits, anti-gas hoods, curtains and gloves, gum boots and eyeshields. Provision of this equipment for the 1,400,000 volunteers (including police and fire brigades) hoped for by the end of 1938 would cost over £2.5 million, £1.5 million of which had already been approved with respect to various items. The Committee was sceptical about some features of this programme, including the provision of anti-gas equipment to all wardens, and authorised an additional £ $\frac{3}{4}$  million instead of the £1 million requested. On being approached again in August it sanctioned some enlargement and acceleration of the programme.

By midsummer the programme for 900,000 Civilian Duty masks was approaching completion. The Department's responsibility for producing these through assembly of containers at Blackburn and arrangements with contractors for facepieces extended to the final act of assembly, carried out at the Regional Stores at Alperton, Middlesex. Some 160,000 of these respirators had been issued by this date to local authorities for training, and satisfactory means, in the form of a microphone attachment, had been found for enabling persons wearing them to use the telephone. The certification mark scheme was brought into use with two firms manufacturing masks of this pattern, and was now to be extended to the civilian mask.<sup>1</sup>

The position regarding anti-gas suits, the main item of protective

<sup>1</sup> pp. 80–81.

clothing, was far less satisfactory. Productive capacity of the country's oilskin manufacturers had proved inadequate to meet the Department's requirements of heavy anti-gas suits, even for training; and a decision had been taken in the spring to rely much more on light suits, which could be proofed in large quantities by linoleum manufacturers.<sup>1</sup> Though by the middle of 1938 manufacture of light suits was proceeding steadily and some improvement over heavy suits had taken place, the number of both types issued for training was less than 50,000.

The Department's requirement for 1 million Service masks was to be met by the War Office, but by mid-August no deliveries of these had been made. Anti-gas equipment of these various types, though still the supply officials' first preoccupation, was losing its monopoly of their attention. The Government's promise to help with provision of war-time hospital supplies included stretchers, bulk purchase of which had still to be arranged. The proposal for some standard equipment for wardens' posts entailed the free issue of stirrup pumps and armlets, and the grant-aided issue of hand rattles. For this and other equipment the processes of settling final designs, obtaining Treasury authority, and arranging for payment, large-scale manufacture and distribution were being carried on within the framework of the five-year programme, ending in March 1939, which governed all the Department's preparations. Since the Home Office was not a contracting Department, a large share of this work fell on H.M. Office of Works.

Steel helmets for the General Services, Police and Fire Brigades would be forthcoming at some date in the autumn. At the opening of the year delivery of the 42 million sandbags authorised had been nearing completion,<sup>2</sup> and the Home Secretary had asked for authority to purchase an additional 275 million bags (20 million for Government buildings, and 255 million for 'vital points') over the next three years.

## The Scale of Attack, and Scales of Preparation

In his report to Parliament on 1st June the Home Secretary again subdivided the A.R.P. problem into defence against high explosive bombs, defence against incendiaries and defence against gas. Before noticing the steps taken in this phase to deal with the problems of fire, shelters and evacuation, brief attention must again be paid to the hypothesis of Germany's scale of attack.

It will be recalled that early in 1937 the Air Staff had produced a revised scale of attack, which estimated that in two years Germany's Air Force would be capable of attacking Britain (from bases in

<sup>1</sup> p. 82.

<sup>2</sup> p. 82. The Department's request in the previous year had been for 500 million, which was twice the annual output of the Scottish industry.

Germany, and against French opposition) on the scales of, (i) over 600 tons of bombs *per diem* sustained for some weeks or, (ii) a much larger weight, attaining a possible maximum of 3,500 tons in the first twenty-four hours, delivered in the opening days of a war. These figures had been subjected to much scrutiny including that (which specially concerns this narrative) of the Warren Fisher Committee,<sup>1</sup> and it was not until almost the end of 1937 that they received formal approval from the Committee of Imperial Defence.<sup>2</sup> This approval included agreement with two observations made with emphasis by the Home Defence Committee and endorsed by the Chiefs of Staff. First, that the weight of attack to be anticipated was so great that not even unlimited financial and other resources could prevent heavy injury to life and property. Secondly, a *caveat* that the estimates composing the scale of attack, like other estimates expressed in terms of averages, were of theoretical rather than practical value, since any attempt to translate them into terms of the effects likely to result in any particular locality or set of circumstances might be very misleading.

The first of these conclusions had been familiar to the planning authorities for the past thirteen years. The scale and intensity air attack might attain in another war had, since the start of their inquiries, been overwhelming; and the practical problem had always been one of furnishing mitigation of the consequences from whatever manpower, money and materials might be available for this purpose. From one important aspect the fact that the maximum attack of which Germany would soon be capable was now to be expressed in the revised formula of 600 tons a day brought no essential change to the problem.

The *caveat* mentioned above was of small assistance to those planning passive defence, since translation of the scale of attack into certain probable effects was essential to their activities. Manpower, money and materials for rebuilding defence were all limited; and A.R.P., as the newest and most passive arm of defence, had the lowest priority in competition for these. Three broad translations—geographical distribution of the attack, types of attack, and rate of casualties—had been employed by the A.R.P. authorities for some years past. These admittedly contained much speculation, and their influence on practical preparations had so far been ‘long range’. The Warren Fisher Committee had attached great importance to attempts to limit the financial implications of the problem by grading the country into areas of differing vulnerability.<sup>3</sup>

<sup>1</sup> pp. 95–96.

<sup>2</sup> Ibid. The Committee reduced the actual Air Staff figure of 644 tons *per diem* to the round figure of 600 tons. Variations were made in the scales to meet other conditions (e.g., a single-handed British war), but these are irrelevant to this narrative.

<sup>3</sup> p. 96.

During 1937 the A.R.P. Department had obtained from the Air Staff fresh hypotheses on the geographical distribution of attack, which employed the new formula of 600 tons a day. The features of the knock-out blow, of centres of government and industrial production, communications and power stations as the most likely civil targets, and of bomb-aiming of high precision still governed these. The parts of Britain considered liable to severe continuous attack were still, nevertheless, only those lying broadly in the eastern half of the island.

After the 1937 Act had placed new emphasis on organisation throughout the country, the Department's most advanced essay in translation of 'scale of attack' into 'scale of risk' took the form of elaborate differential scales of local preparation. Using a grading of Britain into areas of differing vulnerability, it computed the numbers of persons in the various A.R.P. services, and hence the main items of equipment, needed by individual scheme-making authorities. It decided that publication of these scales would be politically and financially inexpedient; and during the course of 1938 discrimination between areas in the two important matters of civilian masks and restricted lighting was being abandoned.<sup>1</sup> Scales of local preparation became henceforward an important guide in weighing the needs in manpower and material resources of individual areas.

The broad hypotheses of casualties and types of attack were still, for the most part, long-range in their bearing on practical preparations. The formula that each ton of bombs dropped on a densely-populated area would cause 50 casualties (17 killed and 33 injured) had with the passage of time acquired much standing as a forecast of the future.<sup>2</sup> This was now used by the Department in estimating the number of First Aid Parties and Posts and Rescue Parties at which local authorities were asked to aim. The order of importance of types of attack employed by the Home Secretary was now expressed by the Department in a rough formula for its guidance. It was anticipated that the German Air Force would devote 50 per cent. of its bomb-carrying capacity to high explosive, 25 per cent. to incendiary bombs, and 25 per cent. to gas; but the use of gas, the formula continued, 'remains problematical', and should it not be used this load would probably be replaced by high explosive.

### The Fire Problem, the Shelter Problem, and the Question of Evacuation

Practical development of defence against these different threats, it is hoped the reader will already be aware, had by no means

<sup>1</sup> pp. 137, 139.

<sup>2</sup> See R. M. Titmuss, *op. cit.*, pp. 12-14; and this volume pp. 11, 15-16, 96.

followed this order of importance. The main factors governing this had been financial provision, the information available about the effects each threat might produce and the relevant administrative machinery in existence. British preference for entrusting new functions to existing institutions, or grafting new branches of effort on to some well-established tree, received an important application in measures to deal with one part of the fire problem.

The fire brigades were a local authority service, similar in important respects to the police forces, with which they often had close historical affinities. They, to an even greater extent than the police, performed in peace functions identical in kind (if far from identical in degree) to those they might be expected to perform in another war. Brief notice has already been paid to the nation's fire brigade 'system'.<sup>1</sup> The foundation of the emergency fire brigade measures had been laid with the issue in February 1937 of circulars to Britain's local fire authorities. From this date onwards, the development of emergency fire brigade measures proceeded in the main independently of that of 'general' air raid precautions by the A.R.P. Department. This administrative bifurcation (which was to continue) was rooted in the fact that the fire brigades had traditions, an administrative framework and technical processes and apparatus different from those of the A.R.P. General Services. It forms the justification for deferring to a later chapter the account of emergency fire brigade measures undertaken before the war.<sup>2</sup>

The emergency plans of the Home Office Fire Brigades Division were formally reported for the first time to the Committee of Imperial Defence at the opening of 1938. A full survey of the problem included remarks on the nature and scale of the 'air raid fire risk'. These, it is important to note, contained the conclusion that 'the explosive bomb can be virtually disregarded as a fire-raising agent as compared with light incendiary bombs', and gave calculations of the formidable numbers of fires which aircraft carrying this missile might cause.<sup>3</sup>

Questions of broad policy affecting both the A.R.P. Department and the Fire Brigades Division related, in this phase, mainly to manpower and conditions of service in the various emergency bodies now in process of formation.

Brief allusion is also necessary here to the legislative framework within which reform of the peace-time organisation and emergency fire brigade measures were proceeding. The A.R.P. Act of 1937 obliged the L.C.C., the boroughs, urban district councils and

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<sup>1</sup> pp. 84-85. Students of the Report of the Royal Commission of 1923 (Cmd 1945), which deals exhaustively with the fire-fighting institutions and methods in existence at the time, may conclude that the word 'system' is misplaced.

<sup>2</sup> Chapter VI below.

<sup>3</sup> e.g., a single bomber carrying 1,000 such bombs might cause 150 fires in a congested area.

(permissively) rural district councils of England and Wales, and the county and town councils of Scotland, to prepare and submit to the Secretary of State fire precautions schemes.<sup>1</sup> The main Regulations, under which approved expenditure on the schemes ranked for grant on the same basis as expenditure on general precautions schemes, entered into force on 10th March 1938. The Fire Brigades Division was, therefore, like the A.R.P. Department, engaged at this time in advising upon, examining and approving a large number of local schemes. And these processes were accompanied in this phase by special attention to recruitment and training for the Auxiliary Fire Service. In the middle of this year the proposals for peace-time reorganisation made by the Riverdale Committee two years earlier bore fruit in the Fire Brigades Act 1938.<sup>2</sup>

But the fire problem of a future war, the reader will recall, was not exhausted by the measures being taken or in prospect to improve the fire brigade organisation. For some years past the Home Office Fire Adviser and others had been examining the question of how ordinary householders, staffs of factories and members of the A.R.P. Services might be helped to defeat the novel and formidable threat of widely-scattered small incendiary bombs.<sup>3</sup> The Incendiary Bombs Committee, under the chairmanship of H.M. Chief Inspector of Explosives, was continuing throughout the months with which this chapter deals both to acquire knowledge about the performance (e.g., penetrative power) of various fire-raising missiles, and to investigate substances, methods and appliances by which the 'amateur' in fire-fighting matters might be helped to protect himself and his property against this threat.

This small body of experts had early concluded that nothing the householder or other amateur could do would actually extinguish the light magnesium bomb, and that their search must concentrate on means of enabling him to 'control' this weapon and extinguish the fires it would almost inevitably cause. Among these means they had always assigned a predominant place to simple substances and appliances which were, or might be made, generally available. The tests at Barnes early in 1937 with teams of girls acting as fire-fighters had proved, from several points of view, a landmark in their investigations.<sup>4</sup> They had shown that women with simple equipment and little previous training could deal with the menace of the incendiary bomb promptly and with success.<sup>5</sup>

The chief appliances used in these tests were a simple hand pump

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<sup>1</sup> pp. 108-109.

<sup>2</sup> 1 and 2 Geo. 6, Ch. 72 (29th July 1938).

<sup>3</sup> pp. 85-86. The novelty, as already suggested, was the outcome of the technical development of aircraft since 1918 multiplied by the development as a practical weapon of the light magnesium bomb.

<sup>4</sup> p. 86.

<sup>5</sup> A genuine problem confronted the A.R.P. authorities over the capacity of women to take part in the various A.R.P. and fire-fighting services.

(the 'Mark 2 Bantam') and the 'Redhill sand container', a metal receptacle accompanied by a long-handled scoop and a hoe. The former instrument, which operated by means of a jet of water, was used to control and extinguish the fire; and the second appliance was used, at a later stage of the proceedings, to control and eventually remove the incendiary bomb. The Bantam hand pump, however, though it gave satisfaction in these trials, was weighty and cumbersome for the purpose and had the drawback of costing some £3-4, which was too much for the average householder. The Incendiary Bombs Committee had therefore examined the possibility of adapting the type of hand pump commonly used for washing motor-cars or white-washing outhouses. By August 1937 they were satisfied with the design of a pump of this kind which cost 12s. 6d.; as it was fitted with a foot support it was called a 'stirrup pump'.

The birth, in a complete scientific sense, of this celebrated pump must, however, be dated nearly a year later, for its development had to go through many stages before, largely through the efforts of the Home Office Fire Adviser, a more satisfactory design was obtained.<sup>1</sup>

The Incendiary Bombs Committee undertook a series of experiments in using a spray, instead of a jet, of water to attack burning magnesium, and in June 1938 these achieved success. They then substituted for the nozzle of the stirrup pump as already designed a 'dual purpose' nozzle, the spray of which could be used to control the incendiary bomb and the jet to extinguish the accompanying fires. By the onset of the Munich crisis, the stirrup pump of this improved design had—in the realm of scientific discovery—superseded the 'Redhill sand container' as the amateur's main fire-fighting appliance. And it remained throughout the war the householders' chief implement against incendiary bomb attack.

For the historical student, the stirrup pump must rank with the civilian gas-mask as one of the chief protective instruments evolved for the use of British civilians in the Second World War. But this similarity, which was apparent at the date with which this volume is now concerned only to a limited number of officials, raised some difficult problems of supply and distribution. The A.R.P. Department decided to supply stirrup pumps, in the first instance, free of charge to one-half the anticipated number (100,000) of wardens' posts required in the country. In March 1938, it obtained Treasury approval for the purchase of 50,000 pumps; and it began to make arrangements with the Office of Works for supply of this first instalment. It should be mentioned that much difficulty was being experienced at this stage in obtaining light magnesium bombs in any quantity for training.

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<sup>1</sup> A British Standards Institute specification was issued in June 1940 and an amended specification in the following October.

Training of the A.R.P. services in incendiary bomb control had not, as noticed earlier, begun by the date of the crisis.<sup>1</sup> A popular account of precautions against fire which every householder was advised to take and of methods and appliances for fighting fires was issued, for the first time, in the draft handbook *The Protection of your Home against Air Raids* circulated to local authorities in February 1938.<sup>2</sup> In a revised edition of this distributed to every home in the country when the Munich crisis occurred, the chief means by which, it was suggested, amateurs should attack incendiary bombs was to spray them with water from stirrup pumps.

But for a variety of reasons, which included familiarity with fires in peace-time and knowledge that organisation to deal with them was in existence, the fire risk involved in future air attack appeared less grave to most citizens than the high explosive and gas risks. In the debates on the A.R.P. Bill, Parliament had shown itself chiefly concerned over the two most radical solutions to these risks—the large-scale provision of air raid shelters, and arrangements for wholesale evacuation from London and other congested areas of citizens taking no vital part in the war.<sup>3</sup>

When moving the Bill's Second Reading the Home Secretary had dealt first with defence against the high explosive bomb and had stated, 'neither this Government nor, so far as I know, any Government in Europe, can protect a building, short of an overwhelming expense, from a direct hit by a high explosive bomb'. He had then announced the Government's intention to provide public shelters giving protection against blast and splinters for, (a) persons caught during an air raid in the streets and, (b) those whose houses were in such a condition that the creation of 'makeshift refuges under their own roofs' would be impracticable. As part of this policy of 'dispersal', the Government proposed to furnish each householder with detailed advice on ways of improvising a refuge room against blast and splinters.<sup>4</sup>

The new feature in this statement was that provision of public shelters for these limited purposes would be an obligation on local authorities under the Act, and would, like other items of general schemes, normally attract a grant-in-aid of 60–75 per cent. During the debate some Members on both sides of the House expressed strong dissatisfaction with the 'unambitious' nature of this shelter policy, as well as doubts about the technical presuppositions on which it was based.<sup>5</sup> After replying to such criticisms the Under-

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<sup>1</sup> p. 126.

<sup>2</sup> pp. 124–125.

<sup>3</sup> p. 106.

<sup>4</sup> H. of C. Deb., Vol. 329, Cols. 45–46, 15th November 1937.

<sup>5</sup> H. of C. Deb., Vol. 329, Cols. 55–165, 243–315; 15th and 16th November 1937.

The most conspicuous feature in the mosaic of local A.R.P. was the shortage of trained staffs and equipment. But some parts of the structure essential for war were beginning to take shape. The selection and preparation of First Aid Posts and formation of First Aid Parties were making progress; though the Voluntary Societies, who formed the backbone of these operations, appealed urgently for more recruits and local improvisation could only provide a small part of the necessary medical supplies, stretchers and ambulances. Most councils were able to mobilise trained Decontamination Squads, and a number were forming 'scratch teams' for rescue, road repair and demolition. Some were selecting and equipping Control Centres, and making arrangements for co-ordination of services and transmission of intelligence. The police, everywhere taking a major part in preparations, were organising a public warning system,<sup>1</sup> and under their instructions some councils were trying out dimmed traffic lights, painting pavement-edges and introducing other 'aids to movement' in a black-out.

The public in general remained calm as, but five or six days from the start of intensive preparations, the country approached the edge of the abyss. When on Wednesday, 28th September the Fleet was mobilised and Parliament met by the Speaker's special summons, war within a few days seemed inevitable. The news, announced by the Prime Minister in the House that afternoon, that an avenue of escape had opened caused a state of high tension to change instantly to one of profound universal relief.

The Home Security organisation at the centre thus never came into being, apart from some exercise by the Secretary to the Treasury of his co-ordinating functions and the brief manning of the Home Office War Room.<sup>2</sup> But the Home Secretary asked local authorities and the public to complete the chief precautionary measures, and the momentum of preparations continued until some days after Mr Chamberlain had returned from Munich. On the day after the sensational change in the outlook, the delivery was begun to every householder in the country of the booklet *The Protection of Your Home against Air Raids*.<sup>3</sup> To take advantage of the public mood, the plans laid some time before for an 'A.R.P. Week' at the beginning of October were widely publicised. The A.R.P. Department issued instructions for lighting restrictions in industrial establishments, railways and dockyards and stated arrangements for central purchase of picks and shovels for wardens' posts.<sup>4</sup> On Thursday, 29th the

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<sup>1</sup> H.O. Circulars of 26th and 27th September 1938.

<sup>2</sup> This was first manned on 30th September to give the Regional Commissioners their 'standstill' instructions.

<sup>3</sup> Fourteen million copies had been ordered by the Department in August from the Stationery Office, which had undertaken to fulfil the order in mid-November.

<sup>4</sup> H.O. Circulars of 27th, 28th and 29th September 1938.

Government published plans for the voluntary assisted evacuation from London of 2 million persons, including 500,000 schoolchildren.

The forecast that if war threatened large numbers in the chief cities would move of their own accord to places of greater safety had proved accurate. An exodus of large proportions from London and other centres had been proceeding, the railways had been handling traffic of Bank Holiday proportions and parts of Wales and the West Country were already crowded with refugees. To the many unable to move without help, or uncertain where their duty lay, the Government's failure to indicate its intentions had been causing much disquiet. But it was now too late for official help in this matter to amount to more than some improvised partial schemes. The A.R.P. Department, with some temporary help from officials of the Ministry of Health, produced a scheme to move a considerable number of 'useless mouths' out of London. This was timed to begin with the evacuation of schoolchildren on Friday, 30th and was cancelled at the eleventh hour.<sup>1</sup> Some local authorities, including the London County Council, had similar plans in readiness.<sup>2</sup> Arrangements for reception and billeting of official evacuees were everywhere in the most rudimentary state; and a Regional Commissioner's conclusion that if the crisis had continued 'evacuation was where our greatest trouble would have arisen' was emphatically endorsed by his colleagues.<sup>3</sup>

The conference of Ministers began on the morning the Munich Agreement was signed at once to cancel or suspend war preparations. Regional Commissioners, less than a week after they had begun to set up their headquarters, found the need for their activities abruptly over, though the Regional Organisation remained formally in being. Their last effective act was to transmit to local authorities the Government's decisions that assembly and public distribution of gas-masks and arrangements for first aid posts should be completed; and that while trenches already dug should remain and be put in order, the digging of new ones should stop.

When Mr Chamberlain, flying home from Munich, felt deep thankfulness that London's sprawling East End had been spared the disaster of air bombardment he again reflected the prevailing emotion of his countrymen.<sup>4</sup> The high tension of this short dress-rehearsal gave way to universal relief that the horrors of large-scale air assault had been averted, springing from new realisation that the

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<sup>1</sup> Mr Eady concluded that this would 'just about have stood up to the requirements of getting refugees out of London and bedding them down that night while we tried to sort out what was going to happen afterwards' (W.G. Eady, *op. cit.*, pp. 12-13).

<sup>2</sup> The L.C.C. actually moved a few thousand schoolchildren to the country.

<sup>3</sup> See also R. M. Titmuss, *op. cit.*, pp. 29-30.

<sup>4</sup> See Keith Feiling, *op. cit.*, p. 321.

nation was still 'lamentably unprepared' to meet this type of warfare.<sup>1</sup> The secrecy in which most of the Government's preparations had been shrouded, it was apparent, had been a serious obstacle to rapid mobilisation for passive defence. Improvisation had been everywhere, at the centre of affairs as well as at the circumference, the keynote of activities; inadequate co-ordination of plans, at every level, had been a conspicuous weakness. The most concrete, visible, measures of defence—the distribution of 38 million civilian gas-masks, the digging of a million feet of trenches, and fresh thousands of volunteers for A.R.P. service—had reflected much credit on the energy of officials and the readiness of ordinary citizens to give voluntary service once danger clearly threatened. But these, it was widely felt, were 'amateur' inadequate achievements when measured against the size of the menace. Preparations in peace against air attack must henceforth be on a scale and of a pervasiveness far exceeding previous efforts.

The Prime Minister's frank admission that Britain's passive defences were 'far from complete'<sup>2</sup> was echoed by other members of the Government and by responsible officials<sup>3</sup>; and official stock-taking of all war preparations was now thoroughly undertaken. From this it was soon to be confirmed that the crisis had made two real contributions to the future. It had provided a valuable, if brief, practical test of the machinery designed for passive defence, and especially for the system of Regional authorities. And it had transformed the spirit of reluctance with which, for the most part, the Government, officials and the public had so far approached the problem of defence against air raids into one of more determined co-operative effort.

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<sup>1</sup> The phrase represents Mr Churchill's conclusion (W.S. Churchill, *The Second World War*, Vol. I, p. 265).

<sup>2</sup> H. of C. Deb., Vol. 340, Cols. 83–85, 1st November 1938.

<sup>3</sup> Notably by the Home Secretary in a speech at Clacton (*The Times*, 21st October 1938), and by Mr Eady in a talk to the Royal United Service Institution on 26th October which was destined to receive much publicity (see p. 162).

# CHAPTER V

## THE NEW ARM OF CIVIL DEFENCE

(October 1938 – September 1939)

### New Machinery and New Urgency

THE scepticism prevailing before the crisis about the possibility of war had been replaced by a feeling, to grow steadily in force, that the country had obtained no more than a breathing space. Though the merits of the Munich Settlement roused bitter argument for months to come, opinion was now almost unanimous on the need for rapid completion of rearmament. In this 'strong forward surge for invigorated rearmament'<sup>1</sup> both active and passive defence against air attack were given much emphasis. The Labour Party decided that 'air raid precautions must be regarded as of equal importance with the other three Defence Departments and made thoroughly efficient',<sup>2</sup> and chose to censure the Government on their 'unpreparedness to protect the civil population when the country was brought to the brink of war'.<sup>3</sup> Fatalism about providing effective protection against air attack was being replaced by a feeling that this could be done, if the authorities showed enough will and energy. The Government reacted promptly to this new perspective by creating machinery to hasten defence measures on the whole 'home front' and to extend direct air raid protection.

After the Committee of Imperial Defence had decided that the country's passive defences were substantially behind military preparations and were especially weak in co-ordination, the Government decided to establish at once some features of the Home Security plan. A Cabinet Minister would be given responsibility for the work of the A.R.P. Department of the Home Office, together with the duty of planning a system of national voluntary service. He would preside over a committee of Ministers whose Departments were 'specially concerned with the Home Front' which was to plan and co-ordinate all civil defence measures, and over a committee of Permanent Heads of these Departments. The Home Secretary would still act as

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<sup>1</sup> W. S. Churchill, *The Second World War*, Vol. 1, p. 296.

<sup>2</sup> Labour Party Manifesto of 29th October 1938, *A Supreme National Effort for Peace*.

<sup>3</sup> H. of C. Deb., Vol. 340, Cols. 411–535, 3rd November 1938.

capable of mass production, which he could erect in his home. The conclusion, rapidly arrived at, was announced by the Minister to Parliament on 21st December.<sup>1</sup> The Government had designed a domestic steel shelter, giving protection against splinters, blast and debris, which they intended to supply free to the poorer inhabitants (estimated at about 10 million persons) of vulnerable areas. The cost of these shelters, together with new steel fittings for strengthening private basements, of about £20 million would be borne wholly by the Exchequer. These new domestic appliances, measures soon to be introduced for compulsory protection of employees, and public shelters would provide fair protection for some 20 million persons. Addition of the domestic air raid shelter to the civilian gas-mask and the stirrup pump as a third basic item of personal equipment to be furnished to large numbers at the national expense must be regarded by the student as revolutionary.<sup>2</sup> The household shelter was to remain, notwithstanding provision of many other forms of shelter, the foundation of shelter arrangements throughout the war.

By the end of 1938 the Government had decided on fresh practical steps for applying these policies. A phase of review and consolidation at the centre was to be followed by new public appeals, consultation and Parliamentary discussion. But before these could be fully set in motion the balance between peace and war had, for the Government and their chief advisers, become still more precarious. The Committee of Imperial Defence asked the Lord Privy Seal and Service Ministers to give urgent attention to means of speeding up defence preparations, and instructed all departments to give higher priority to war planning.

The White Paper on Defence of 1939 stated the need for large increases in the scale and tempo of war measures, and further advanced recognition of civil defence as a 'fourth arm'.<sup>3</sup> Expenditure on the three Defence Departments of £262 million for 1937 and £388 million in the year just ending was to grow to £523 million for 1939. This 'enormous rise', as the Chancellor of the Exchequer described it, was, in conformity with the guiding principles of defence policy, due mainly to expansion of active defences against air attack.<sup>4</sup> But passive defence was put on a formal footing of equality with the Defence Services when the Chancellor asked Parliament for new borrowing powers for defence.<sup>5</sup> Expenditure on Air Raid Precautions would amount in the current year to £9¼ million. It was

<sup>1</sup> H. of C. Deb., Vol. 342, Cols. 2880-2892.

<sup>2</sup> The accent is here on the word 'personal'. Each of these items (though remaining Government property) was for personal use and relied for its efficacy on a definite measure of skill and attention on the part of its possessor.

<sup>3</sup> Cmd. 5944, February 1939.

<sup>4</sup> See p. 114.

<sup>5</sup> H. of C. Deb., Vol. 344, Col. 47, 20th February 1939.

estimated for 1939 at £42 million, including the £20 million to be spent on the new shelter programme but excluding the 'civil defence' items of help to public utilities, and emergency food, water and hospital arrangements.<sup>1</sup>

The scale of attack, as the reader is aware, had been revised in April 1937 in an upward direction.<sup>2</sup> Now, nearly two years later, the Air Staff had to present a still more forbidding picture. No part of Britain would be beyond the reach of long-range bombers based in Germany, though the intensity of attack could be expected to diminish as the enemy penetrated to the west. Northern Ireland would represent about the extreme operational range.

Though, in the absence of experience, the hypothesis contained large elements of conjecture, the Air Staff now estimated the possible scale of attack in April 1939 at a daily average of 700 tons of bombs (dropped by some 650 German aircraft) as a maximum effort during the first week or fortnight of a war. The comparable figures for April 1940 would be 950 tons of bombs dropped by some 800 aircraft. Naturally, attack on this scale could not be maintained for long; but after a substantial reduction it might from time to time be revived. As an alternative to an attack of this kind over a week or more, the Germans might choose to deliver as much as 3,500 tons on London or elsewhere in the first twenty-four hours of a war. A still higher degree of accuracy in bomb-aiming was now, the experts considered, probable.

The experience of air bombardment in the Spanish Civil War, though closely studied, had not offered much useful general data applicable to the British hypothesis.<sup>3</sup> Barcelona, a capital and a port, was in some respects and on a smaller scale comparable to London as a target. The 230 or so raids against this city had been mainly directed against the coastal area and the port. But many of these had been made by Italian squadrons and others by one or two German seaplanes; and though much general destruction had been caused, the marksmanship of the attackers was often indifferent. Some 2,500 persons had been killed in the city, and a rather higher number seriously injured. One of the chief deductions from Barcelona's experience was that in the indiscriminate attacks of March 1938 a total of 44 tons of bombs had caused 3,000 casualties, about 1,000 of which were fatal. This tended to confirm the British experts' long-established estimate that each ton of high explosive dropped on a congested area might cause 50 casualties.

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<sup>1</sup> These, less hospital arrangements, were estimated at another £14 million.

<sup>2</sup> pp. 96, 142-143.

<sup>3</sup> pp. 103-104.

'dispersal'.<sup>1</sup> Its outstanding feature was the Government's decision to give substantial help to citizens dispersed in their own homes. The invention of a practical household shelter—to be quickly known as the 'Anderson'—had transformed the possibilities hitherto envisaged for protection of homes against air attack. The Government had undertaken to supply these shelters, as well as steel fittings for strengthening basements, free to some 2½ million families. They would also give more positive help over the provision, as a subsidiary means of protection, of public shelters. This programme was welcomed by Parliament and the public as evidence of the Government's determination to press on with a method of defence which they regarded, with the complementary method of evacuation, as over-shadowing all others in importance.

The 'Anderson' had originally been conceived as a shelter to be erected inside the average small working-class home. But the experts soon discarded this idea as open to various objections, including the probability that occupants would be trapped by the fall of their house and killed by fire or escaping coal-gas.<sup>2</sup> During Munich householders had been advised to dig trenches in their yards or gardens, and now, by an extension of this plan, the 'Anderson' was designed as an outdoor or surface shelter. It consisted of fourteen corrugated steel sheets weighing, with other components, about 8 cwt. A corrugated steel hood, curved for greater strength, would be sunk some two feet in the ground and covered with earth or sandbags. The structure would be 6 ft. high, 4 ft. 6 in. wide, and 6 ft. long and provided with two exits. It was intended to accommodate four, or at a pinch six, persons. It could be erected fairly quickly by unskilled labour and would not take up much space. It would not, as the authorities made plain from the outset, be 'bomb-proof', i.e. protect its occupants against a direct hit. But it would offer a good measure of protection against bomb-splinters, blast and falling debris.<sup>3</sup>

The shelter would cost about £5, which was less than the cost per head of trenching or providing concrete structures, and had the additional advantage from the Government's point of view of some 'residual' or peace-time value. The steel industry set up an organisation to handle the contract arranged by H.M. Office of Works for the Government and allocate orders for components to individual firms; productive capacity was estimated at two million shelters within nine months. Distribution presented a new and intricate problem. As it would not be practicable for local authorities to store

<sup>1</sup> pp. 170–171

<sup>2</sup> *Air Raid Shelter Policy*, Cmd. 5932, December 1938.

<sup>3</sup> For a fuller description see *Sectional Steel Shelters*, Cmd. 6055, July 1939. Dr. David Anderson had taken a large part in the designing of this shelter.

the shelters, the railway companies agreed to collect the components from manufacturers, sort them into shelter units and deliver these to householders at addresses supplied by local authorities. These arrangements would be synchronised by the A.R.P. Department, helped by a committee of representatives of the British Iron and Steel Corporation and the railway companies; and an elaborate system of demand notes, consignment notes, despatch notes and address lists had to be devised by the Department's new Shelters Supply Branch. The railways, though not agreeing to a flat-rate charge, made some reduction of normal freight charges.<sup>1</sup>

These details give one illustration of the degree in which A.R.P. now involved execution, or the diversion it already represented of civil administrative effort into war preparations. The new shelter programme, of which the 'Anderson' formed only one feature, was to absorb an important share of the attention of officials concerned with A.R.P. in the remaining months of peace. In the earlier part of 1939, as already observed, development was taking place at the centre and in Regions of machinery to administer shelter matters.<sup>2</sup> At the opening of February local authorities were told of the arrangements just described.<sup>3</sup> Distribution of 'Andersons' was to be limited, for the time being, to large towns in the most vulnerable areas. Those entitled to free issue were householders compulsorily insured under the National Health Insurance Acts<sup>4</sup> (i.e., the majority of manual workers) and those not in this class with, broadly speaking, an income of not over £250 a year. Others would be given the chance to buy these shelters once free distribution had been substantially completed. The delivery of 'Andersons' started at the end of February, or but two months after the Lord Privy Seal had announced their invention.

In what the Government claimed was a 'balanced programme of reasonable protection' public shelters would take the form of trenches and some existing buildings, where necessary strengthened. The decision that the trenches dug in the Munich crisis should (if suitably sited) be made permanent by lining and strengthening was the beginning of the more positive approach to the whole shelter question.<sup>5</sup> After much public criticism of delay, the A.R.P. Department issued local authorities with a standard design and general

<sup>1</sup> They also charged the high delivery rate of 6s. 6d. in London because shelters had to be delivered to the site of erection—normally the back-garden or yard. In at least one instance a shelter had to be taken upstairs and dropped through a first-floor window because the ground-floor tenant refused access.

<sup>2</sup> pp. 174, 182.

<sup>3</sup> A.R.P. Dept. Circular 28, 8th February 1939.

<sup>4</sup> 26 Geo. 5 and 1 Edw. 8, Ch. 32.

<sup>5</sup> H. of C. Deb., Vol. 340, Col. 425-428, 3rd November 1938; p. 162.

specifications for permanent trenches eligible for grant.<sup>1</sup> Authorities were asked to provide shelter for up to 10 per cent. of their populations by making permanent trenches already dug to a depth of at least four feet. These were to be lined and covered with concrete or steel; but their entrances were to be closed, and they were not at present to be fitted with duck-boards, seats or sanitary equipment. The Department subsequently received and approved a large number of designs for reconstructing trenches submitted by private firms. Towards the end of 1938 the decision was made to retain most of the trenches dug in the crisis in London's Royal Parks.

The Government resisted suggestions that they should pay the whole cost of trench-digging in the crisis. But they agreed to pay the sum of something under £1 million incurred by authorities for timber, steel and other materials not delivered by the time the crisis ended or no longer appropriate to the standards recommended.<sup>2</sup> During early 1939 the Department tried, without much success, to dispose of surplus material of this kind to the War Office and other departments.

Although trenches may seem to the reader a primitive method of protection, such an attitude was foreign to the prevailing views at this time. Concern was felt at the opening of 1939 both by the Government and the public over slow progress with trench reconstruction, especially in London. A decision was taken by the Government to introduce twenty-four hour working. By the end of March the information (which was far from complete) sent to the Department suggested that, while most unwanted trenches throughout the country had been filled in, many authorities had taken no more than first steps to reconstruct trenches they intended to preserve. The Department asked Metropolitan Boroughs to complete this work with all speed and explain the reasons for delay.<sup>3</sup> It was clear that administrative and technical difficulties bulked large; though some Boroughs were stalling while awaiting the Government's decision on certain elaborate shelter schemes. A month or so later, however, the Department viewed the situation as 'convalescent if not healthy'.

Trench-reconstruction had, for the time, diverted energy from provision of shelter in existing buildings. The Government had decided in November that local authorities might strengthen these buildings in peace or else collect suitable materials for the purpose.<sup>4</sup> During and for some months after Munich supplies of sandbags

<sup>1</sup> H.O. Circular of 25th November 1938. Within a fortnight the Department found that its design did not comply with its specification and a revised version of both were produced in January (A.R.P. Dept. Circular 2, 9th January 1939).

<sup>2</sup> H. of C. Deb., Vol. 342, Col. 2196, 15th December 1938.

<sup>3</sup> A.R.P. Dept. Circular 66, 30th March 1939.

<sup>4</sup> p. 170.

had been quite inadequate, but by the spring of 1939 this situation was improving.<sup>1</sup> Progress was, nevertheless, much restricted until legislation had given the authorities power to enter private buildings. At the end of April authorities in the more vulnerable areas were urged to aim at providing some form of public shelter for about 10 per cent. of their populations in mainly residential areas and about 15 per cent. of the day-populations in business areas.<sup>2</sup>

When launching the new programme Sir John Anderson had said the Government did not consider it practicable to provide 'bomb-proof shelters', at least as a short-term policy, though they were ready to give this question more consideration. He was meeting a challenge, growing in force before the crisis and now assuming much larger dimensions, to the whole dispersal policy, with its corollary of partial protection. Those making this challenge believed it was one of the Government's first duties to furnish protection by 'deep shelters' of some kind for the public in the principal danger zones. Experience in the Spanish war, where Barcelona and other cities had offered good protection in simple tunnels underneath streets and pavements, seemed to reinforce this argument.<sup>3</sup> For some time past proposals for making deep shelters with some peace-time value—e.g., underground garages, warehouses, shops and cinemas—had been presented to the Government.

In August 1938 the 'A.R.P. Co-ordinating Committee', an unofficial body of architects, surveyors and engineers, had submitted a detailed scheme for a system of tunnel shelters in St. Pancras. They claimed this would give bomb-proof protection at a smaller cost per head than any other type of shelter, and would mean that those in the densely-populated parts of this borough would have to walk at most two hundred yards to shelter. Soon afterwards a book by Professor J. B. S. Haldane called *A.R.P.* gave details of a shelter scheme on these lines, and strongly attacked the dispersal principle.<sup>4</sup> This publication was accompanied by meetings which began a deep-shelter campaign by Communist and other left-wing forces which was to prove a serious source of embarrassment to the Government.

As a consequence of Munich the demand for some form of deep shelters grew more general and was supported as a long-term policy

<sup>1</sup> A.R.P. Dept. Circular 55, 22nd March 1939.

<sup>2</sup> A.R.P. Dept. Circular 91, 25th April 1939.

<sup>3</sup> pp. 86, 124.

<sup>4</sup> In an article in *Nature* for October 1938 Professor Haldane demonstrated mathematically that there were no grounds for assuming that bombs dropped at random would cause fewer casualties if people were dispersed than if they were concentrated. This, though correct, was not relevant to the Government's policy of avoiding the expected effect on morale and strain on the A.R.P. services of mass casualties in one spot.

compensation for injuries incurred in peace-time A.R.P. training. Finally, the Government took powers to deal by a transfer of functions with a defaulting local authority.

The new financial burdens the Bill imposed, especially on the shoulders of the general taxpayer, were large. Grants to employers for shelters would cost the Exchequer about £8 million, which represented over one-quarter of the expenditure, based on the assumption of an average cost of £4 per employee, which industry was expected to incur in meeting this obligation. Assistance to public utilities was now to cost the Government £9 million. The new Government expenditure contemplated under the Bill was £25 million, which was additional to the £20 million to be spent on free 'Andersons' and basement fittings.

This Act, with that of 1937, gave civil defence an extensive legislative code. Its principles, in the main, had been decided on for some time past, and its primary effect was the creation of much new machinery for applying these in time of peace. It sought, the Lord Privy Seal said, 'to capitalise the great volume of good will and readiness to collaborate which exists in all sections of the community'; its penal sanctions would be held in reserve since the Government believed they were 'putting the yoke on a willing horse'. Debates on the Second Reading proved, in fact, what strong support now existed for more vigorous and all-embracing passive defence.<sup>1</sup> The view prevailed that in the lengthening shadow of another war, compared with which 'the last one would look like a picnic', the Government was moving neither fast nor far enough and the Bill was criticised not for its principles but for its omissions. The Labour Opposition forcibly repeated the view that civil defence, as the 'fourth arm', should be an entirely national charge and complained of the 'enormous financial liabilities' now imposed on local authorities. Its chief spokesman, Mr Morrison, called the shelter provisions 'a collection of odds and ends' falling far short of a comprehensive policy; and feeling that the Government should do more to provide deep shelters at least in the chief danger zones was widely expressed.<sup>2</sup>

Though the Bill was regarded by various critics as 'no more than a foundation', it imposed so complex a system of peace-time duties that its passage through Parliament consumed much time. Discussion at Committee stage continued until mid-June,<sup>3</sup> and the Bill did not reach the statute book until the middle of July.<sup>4</sup>

Attention must return to the practical progress over shelters during

<sup>1</sup> H. of C. Deb., Vol. 345, Cols. 2633-2751, 2811-2958, 4th and 5th April 1939.

<sup>2</sup> p. 190-191.

<sup>3</sup> H. of C. Deb., Vols. 347 and 348; 9th, 23rd, 24th May, 12th and 13th June 1939.

<sup>4</sup> 2 and 3 Geo. 6, Ch. 31, 13th July 1939. A summary of the Act's main provisions was issued by the A.R.P. Department to local authorities as A.R.P. Dept. Circular 158, 3rd August 1939.

these months. So far as the public at large was concerned this still chiefly took the form of domestic shelters. The programme for manufacture and distribution by the end of 1939-40 of 2½ million 'Andersons' to protect about 10 million citizens was being steadily carried through.<sup>1</sup> The specified areas to which this supply was for the time being restricted had been provisionally defined at the end of April, and comprised industrial centres of some size and other probable targets containing a population of about 27 million.<sup>2</sup> A good many protests by local authorities at their exclusion caused additions to a revised list of these areas issued in August.<sup>3</sup> Householders could either store the parts of 'Andersons' or erect them with the advice of local authorities, who, however, were not obliged to help in the work of erection.

The difficulty still experienced in establishing data about high explosive attack was illustrated by the fact that distribution of 'Andersons' had begun before their testing had been completed. At the opening of 1939 'load tests' had shown that 'Andersons' were strong enough to bear the weight of any debris falling on them from the type of house for which they were intended. But it was not until some months later that a series of 'explosion tests' proved conclusively that their fabric could withstand without damage a 500 lb. high explosive bomb falling at least fifty feet away; and it seemed probable that this represented the minimum degree of protection they would afford.<sup>4</sup> It was established at the same time that they would protect their occupants against blast from a bomb of this size bursting in the open at a distance of thirty feet or more. But this soundness of the 'Andersons' from a structural standpoint, it soon became clear, was counterbalanced by an important practical defect, namely liability to flooding. Soon after delivery began, local authorities in some areas were being asked by householders to remove shelters which had become waterlogged, and in mid-summer the A.R.P. Department issued the first of many circulars suggesting remedies for this problem.<sup>5</sup>

It was obvious, in addition, that 'Andersons' and steel basement fittings would not be suitable for every type of dwelling. During May the Department gave local authorities information about a third form of domestic shelter, a surface shelter of brick and concrete.<sup>6</sup> This, in its standard design, had the same floor space as the 'Anderson' and could also provide shelter for up to six people. It

<sup>1</sup> p. 193.

<sup>2</sup> A.R.P. Dept. Circular 91, 25th April 1939; p. 192.

<sup>3</sup> Civil Defence (Specified Areas) Order, 1939, S.R. & O. No. 893, 14th August. This twofold division of the country for domestic and industrial shelter purposes was distinct from the more elaborate grading of (mainly eastern) areas for the A.R.P. Services.

<sup>4</sup> *Sectional Steel Shelters*, Cmd. 6055, July 1939.

<sup>5</sup> A.R.P. Dept. Circular 136, 11th July 1939.

<sup>6</sup> A.R.P. Dept. Circulars 91 and 102, 25th April and 5th May 1939.

the six unskilled members of Light Parties in first aid, including special methods of handling casualties trapped under debris.<sup>1</sup>

Equipment for Rescue Parties, designed from experience gained in the 1931 Tokyo earthquake, consisted mainly of levers, crowbars, ropes, jacks and other instruments in common use. As every party would need a complete set of these for instant turn-out in war, the Government decided in March on the principle of central supply. It proved difficult, as usual, to procure the large quantities required, and in June orders were placed for two of the most important items, lifting tackle and ratchet jacks, in the United States. By early August good progress was being made with the delivery of most of these articles to local authorities.

While the Home Office remained responsible for First Aid Parties and for recruitment and some training of all three Casualty Services, responsibility in other respects for the First Aid Post and Ambulance Services had been transferred in the autumn of 1938 to the Ministry of Health and Department of Health for Scotland.<sup>2</sup> Recruitment and training of these services presented serious difficulties, arising mainly from the fact that in the years before Munich it had been too readily assumed that these could be performed by the Voluntary Organisations, whose members were in fact too few and too unevenly distributed.<sup>3</sup> The War Office had the first claim in war on members of the Red Cross and did not release even 'immobiles' from their military obligation until May 1939; many members of the St. John Ambulance Brigade, despite its civilian character, were joining the R.A.M.C. In addition, the work of First Aid Parties was regarded by many A.R.P. volunteers as either a soft or an unpleasant job. The degree in which this service had become 'nobody's child' is suggested by the fact that as late as August 1939 a Bournemouth staff instructor could write to the A.R.P. Department saying his authority had decided to form First Aid Parties and asking which central Department was responsible for the service.

By August 1939 the service still needed 78,000 volunteers, equivalent to 44 per cent. of its establishment. The position, in view of the heavy air raid casualties expected, was so serious that the A.R.P. Department asked the War Office to enlarge the Territorial Army medical service to provide war reinforcement for A.R.P. needs. The War Office agreed on condition that the Home Office provided

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<sup>1</sup> H.M. Office of Works was also organising Rescue and Demolition Squads which were eventually integrated with the general rescue organisation.

<sup>2</sup> pp. 168-169.

<sup>3</sup> pp. 126-129; e.g., in October 1938 the County of London Branch of the British Red Cross Society had 1,593 members, of whom seven-eighths were women and more than one-quarter lived in Chelsea or Westminster (see H. S. Reid, *Story of the County of London Branch of the B.R.C.S.*).

instructors and equipment; but when the Home Office found they were to provide these to train the whole British Expeditionary Force in stretcher bearers' duties they allowed the proposal to drop.

Training for this service had been causing much difficulty. The syllabus and manuals of the Voluntary Societies, though sound for their own purposes, were in various ways unsuited to A.R.P. volunteers.<sup>1</sup> The Department took two steps to remedy the situation. First, courses were given at the Staff School to qualify organisers both to train instructors for First Aid Parties and to perform administrative duties concerning these parties. Secondly, a handbook was produced on training and organisation which tried to relate principles of 'pure first aid' to A.R.P. needs, dealt with team training, and stressed combined training with (in particular) the Rescue and Ambulance services.<sup>2</sup> After some disagreement with the Ministry of Health over its contents, this was sent to local authorities three days before the outbreak of war.

By May 1939 only 30,000 persons, out of a total estimated need of 130,000, had joined the Ambulance Service. The L.C.C. had obtained under 5,000 drivers and attendants (about one-quarter part-time) for an establishment of over 17,000; and Birmingham, Leeds, Manchester and other areas were in equal difficulties. Only slow improvement was made in the following months. It was estimated in mid-summer that only about 40 per cent. of those in the service were trained. In London and most other towns vehicles available for use as ambulances were still far short of needs. Stretchers and stretcher-carrying fitments had been made generally available by the Government. Stretchers were of a standard size, all-metal and easily decontaminated, though not being collapsible they were difficult to store.

Recruitment for First Aid Posts and Mobile Aid Posts (cars or vans to carry doctors, nurses and equipment to an incident) had proved much more satisfactory.<sup>3</sup> First Aid Posts were normally to be at hospitals or other medical establishments, and by mid-summer a large number of these had been chosen. But a Ministry of Health survey in July of sixteen important areas showed that in other respects progress in this service was fairly slow. Not much had been done to adapt or give blast protection to posts, arrangements for personal decontamination were backward, some areas had not appointed doctors or nurses to posts, and less than half had made messing and sleeping arrangements for whole-time staff. About half those in the service had been fully trained. Fair progress was being

<sup>1</sup> A.R.P. Dept. Circular 16, 26th January 1939.

<sup>2</sup> A.R.P. Handbook No. 10, *Training and Work of First Aid Parties*, August 1939.

<sup>3</sup> By June 1939 about 122,000 volunteers had been recruited for an establishment of 160,000.

## CHAPTER VII

### RESPIRE

(September 1939 – April 1940)

AT 11.15 on the morning of Sunday, 3rd September, a clear and invigorating day, the Prime Minister broadcast to the nation, 'this country is at war with Germany'. Great numbers of his audience had already abandoned hope and been occupied for the past ten days in eleventh-hour preparations to meet a new catastrophe. But Mr Chamberlain's announcement that the gulf separating peace from war had at last been crossed was followed by an impressive silence, a hush which fell over the manifold activities of a national mobilisation. A few minutes later the strange fluctuating notes of the air raid warning signal broke out over London, and other places in Britain including Scotland.<sup>1</sup>

The form of attack most closely associated with new war in the minds both of the best-informed and the least-informed in the land—devastating assault from the air—seemed about to be promptly delivered. Cabinet Ministers and officials in Whitehall engaged in the most urgent matters took up their papers and their gas-masks and went underground to basements.<sup>2</sup> Civilians on their lawful occasions in the streets were shepherded without ceremony by police and steel-helmeted wardens into the nearest shelters. All traffic stopped. Casualty and rescue squads stood ready in depots to rush to the scenes of attack; and officials waited in town halls to hear where the first bombs had fallen. After about half-an-hour the sirens wailed again, this time in the steady note of the 'all clear'. The shelterers emerged; the traffic in the streets restarted; and amid a mingled sense of relief and anti-climax national mobilisation proceeded.

In the middle of the following night (or, more precisely, at 2.46 a.m. in the London area) the warning was repeated. After many persons had left their beds and spent an uncomfortable hour or so in basements the 'all clear' again sounded.<sup>3</sup> On 6th September

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<sup>1</sup> The sirens sounded in the London area at 11.28 a.m.

<sup>2</sup> For an account of this process in the War Office see Dudley Clarke, *Seven Assignments* (1948), pp. 19–21.

<sup>3</sup> The length of the warning in London was about half-an-hour, but many citizens were still either unable to distinguish between the 'alarm' and the 'all clear' or to hear the signals clearly.

early risers in London and the south-east on their way to work were greeted with a third warning not followed by any attack. The warnings of 3rd–4th September had been ‘false’, in the sense that units of Fighter Command had not accurately identified aircraft which proved innocuous.<sup>1</sup> But that of 6th September was genuine or due to German aircraft approaching the eastern coast.

## Mobilisation against a Knock-Out Blow

Britain, again at war, was confronted with a threat more deadly than any in her long experience. Germany could use the air weapon to attack her people and cities with a speed and force capable of causing widespread heavy destruction of life and property, grave dislocation of industrial processes, and disintegration of morale to the point, possibly, of extinguishing the people’s will to carry on the struggle. The logic by which wars had hitherto been fought might easily be reversed by conversion of civilians and civil occupations into the ‘front-line’. Direct onslaught against the nation’s vitals—the Government and higher apparatus directing the war, factories, businesses and communications, the families and homes of those on active service—might paralyse all military operations and cause defeat.

The fact that this threat did not materialise at the time or in the form in which it was expected may too easily obscure its historical reality. It is in human nature both to forget—especially, perhaps, a catastrophe averted—and also to be wise after the event or to claim prescience that events which did not happen could not have happened. These remarks are intended to reach further into the narrative that follows than the immediate topic of the nation’s mobilisation late in the summer of 1939 against an aerial knock-out blow. It was to be proved, in the event, that large quantities of manpower, materials and money were spent in preparations against attacks from the air which either were not made at the time and in the form in which they were expected, or were not made at all.

Mobilisation, in the broad sense intended here, may be dated from nearly two weeks before Mr Chamberlain announced the state of war and the first air raid warning was sounded. Before attempting a summary of its course some brief recapitulation of certain features of the situation seems advisable. For some years past the British Chiefs of Staff, assessing Germany’s likely course of action, had regarded as highly probable her choice of all-out lightning air attack on Britain immediately after, or perhaps before,

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<sup>1</sup> On the Sunday morning a single light aircraft returning from France had failed to report its movements to the authorities and had therefore been presumed hostile.

a declaration of war.<sup>1</sup> The character of this attack could, in the nature of the case, only be conceived in general terms. Its clearest and starkest feature was its scale—the enormous weight of bombs which Germany's air force, operating from its home bases and in spite of the best efforts of the Allied defences, could drop on these islands.

Limitations of range would restrict the heaviest and most sustained attacks to the eastern half of Britain. For the rest, British experts could only make broad assumptions, deduced from German tactics and temperament and what was known to them of German armaments, that the enemy would concentrate his attempt in a series of raids of great violence but fairly short duration and mainly, though not exclusively, by day; that he might choose as his immediate objective the dislocation of Britain's war industry, and in particular the destruction of the Government offices, business organisations, communications, docks and factories of Greater London; and that the tonnage of bombs he delivered might be in the rough proportions of one-half high explosive, one quarter incendiary and one quarter gas bombs.

The consequences of this assault could, likewise, only be measured in broad terms. Use of the air weapon against China, Abyssinia and Republican Spain had been too limited in scope to furnish much useful data. But Spanish experience had reinforced the most important conjecture—suggested by the bombing of London in the First World War—that high explosive attack on this scale, apart from any use of gas, would cause an extremely large number of casualties. Material damage, especially—since high accuracy of bomb-aiming was assumed—to essential services and war factories, would also be of large proportions. The effects on Britain's morale could be measured with even less exactness. But the authorities considered it certain that the strain on the people's endurance would be of the severest order and that this might well, on particular occasions and in particular places, cause panic and serious disintegration.

The size of this threat—its merely quantitative aspect—had, from the outset, shaped the character of Britain's counter-measures. The active defences of the Army and Royal Air Force had been given chief emphasis in the total rearmament programme. And the role of the passive defences against such assault had been conceived as necessarily limited to mitigation of its consequences. Heavy loss of life and material damage were, by the terms of the hypothesis, inescapable. But precautions of a definite character could be taken which, it was confidently hoped, would minimise the scale of these disasters. From this conception successive Governments had evolved

<sup>1</sup> pp. 142–143, 172.

a strategy of passive defence which, though most complicated in practical application, was based on a few guiding principles. The danger, seen in the framework of limited resources of manpower, money and materials, had led to a policy of spreading the A.R.P. burden as widely as possible. Passive defence had been predominantly regarded as an additional service to be grafted on to familiar institutions—civil Departments, the normal organs of local government, industrial employers, and citizens enrolled as members of the A.R.P. services and taking personal action to defend their own homes.

‘Total war’ would be met, in the first instance, by democratic self-help, with responsibility placed squarely on each local community and factory to take the major part in organising its own defences. Service in A.R.P. was to be looked upon by the individual citizen less as a new form of national service than as service to the particular community in which he lived or carried on his business. These diffused responsibilities, finally, were to be welded together by reliance on ‘free collaboration’, with the Government introducing the element of compulsion only as a last resort.<sup>1</sup>

For over four years these principles had been used to forge certain weapons of defence. Mobilisation of civilian resources against this threat—the superimposing of A.R.P. duties on the pattern of normal life—had been proceeding since early 1935. Its pace had depended, primarily, on the judgment of the Government, officials, employers and private citizens as to whether, and how soon, the hypothesis of war would become fact. British Governments had been set the new problem of arousing the whole nation to the need for taking defensive action, while avoiding causing alarm and the dislocation of normal activities by suggesting that war was either inevitable or imminent. Their preference for cautiousness had been overborne by the Munich crisis, which by making the nearness of danger apparent to all had greatly stimulated preparations. Thenceforward, with new machinery and vigour at the centre, progress had been more rapid. The further crisis of March 1939 had caused most local authorities and employers to make strong efforts to press on with A.R.P. By the end of August, when the Government began to put passive defence on a war footing, a large part of the nation had reached a state of mental preparedness for large-scale assault from the air. And much had been done in constructing five principal weapons, or methods of protection.

An air raid warning system, the first weapon of defence, had been extended beyond its primary operational role to give warning of impending attack, first to a considerable number of civil establishments and factories and then to the public at large. Its purpose to

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<sup>1</sup> Sir J. Anderson, H. of C. Deb., Vol. 336, Col. 2113, 1st June 1938.

save life by giving individuals the time to seek shelter and take other measures had, by elaborate organisation, been blended with the second strategic aim of reducing industrial and general dislocation to a minimum. Secondly, severe restrictions on all forms of lighting, aiming at an almost total nation-wide black-out, would attempt defence against air attack by the method of concealment. Industrial and other essential activities would, it was hoped, be continued without serious interruption in spite of the grave handicaps this method would clearly impose. Much responsibility in this sphere rested with individuals, particularly employers; and many technical difficulties remained to be overcome. Other methods of attempting concealment, for example by camouflage or the use of smoke, had not yet reached much practical development.

The two, as it seemed to the ordinary person, most certain methods of defence—evacuation from the danger zones, and protection in the form of shelters—had raised grave strategic implications. Each, to be organised in peace on a large scale, would require much diversion of effort, materials or money; and each, if resorted to on such a scale in war, might spell submission to the enemy's main aim of causing wholesale dislocation. The provision of each had, in the result, been built on a series of compromises. All those who would be engaged on essential war work had been asked to refrain from evacuation and to stay on the job. Plans of a secret nature had, however, been made for the Government machine to move out of London should attacks develop to the point of threatening its physical existence. Others, private citizens, businesses of all kinds and some Government staffs had been exhorted either to move from the danger zones in peace, or to have plans in readiness to move immediately a war began. The private migration of these 'non' or less-essential persons would, it was hoped, besides saving their lives, reduce the proportions of the problem in the threatened cities. Fairly large-scale movement from London and other cities of families, business firms, schools and other institutions had, in fact, been taking place since about the end of June. Elaborate plans, to be put into force when war was imminent, had been made for the official but voluntary evacuation from the danger zones of about 4,000,000 children, mothers and invalids.

Belief that dispersal would save lives, shortages of time, materials and labour, and apprehension about the psychological results of prolonged sheltering had caused a policy of widespread official provision of shelters offering only moderate, or blast and splinter, protection.<sup>1</sup> Citizens had been assured that the basements and ground floors of their homes, or trenches in their gardens, would give

<sup>1</sup> The basic standard, it will be recalled, was safety from the blast and splinters of a 500 lb. bomb bursting 50 feet away.

good protection against anything short of a direct hit. While the majority were expected to rely on their own resources in protecting their homes, some 1,500,000 of the poorest householders (to be increased, it was hoped, to 2,500,000) in the danger zones had been given free 'Anderson' shelters; and several thousand others had been helped to strengthen their basements. Employers of some size in all industrial centres had been compelled to provide their work-people with blast and splinter-proof shelters; though this compulsion, not introduced until July 1939, was only beginning to produce positive results. For those caught in the streets and other public places during attacks—roughly estimated at a maximum of 10–15 per cent. of the populations of the most congested areas—public shelters of various kinds had been planned. Trenches of a permanent kind, sufficient throughout the country for about 500,000 persons, were the main form of such shelter so far provided. But in addition many buildings had been earmarked by local authorities, and a small proportion of these strengthened, for use as public shelters.

Personal protection had, for reasons familiar to the reader, been carried furthest with respect to the menace of gas. Every adult had been furnished by the Government with a mask, believed to be quite efficient against all gases the enemy might use; and special masks for babies were being distributed by the outbreak of war in London and other cities. Personal anti-gas equipment in the form of more durable masks and protective clothing was being issued to the A.R.P. services, the fire brigades and the police. Various methods had been devised for gas-proofing householders' refuge rooms and other forms of shelter; extensive arrangements had been made for the cleansing of casualties caused by liquid gases, and for the decontamination of streets, buildings and vehicles; and special methods had been set up to detect gas attack and give public warnings of this.

The fifth and most active major weapon of defence was the organised formations charged with the duty of repelling the onslaught on the ground by ensuring that the public took proper defensive action, reporting the attacks when they came and thereafter saving lives and property. The heterogeneous, locally organised, voluntary A.R.P. services had grown to over 1,500,000 men and women whose training and equipment, though still far from complete, had made substantial progress. In addition, an unknown number of persons employed in factories and offices had been in some degree trained and equipped to defend their fellow-workers and places of employment. And the regular police forces and fire brigades had been given substantial war-time reinforcements.

The German-Soviet non-aggression pact, announced to the world on 21st August, caused the Government to take the first steps to make these defensive weapons ready for immediate action. The

general mood of the country in the present disturbed conditions was almost one of disappointment and anti-climax, owing to the fact that the dangers against which precautions had been taken had not materialised'. The bracing of effort to meet the onslaught had produced a correspondingly sharp reaction. The Home Secretary had to take steps to remind the public that Britain was engaged in 'a struggle for life' in which 'the home front is a vital front', and that 'a state of war readiness must be maintained'; and to answer rising public complaints that the Government had recruited an unnecessary number of persons for the A.R.P. services; had introduced restrictions on lighting and amusements which were unnecessarily severe; and had withdrawn normal facilities such as hospital treatment from the public in too drastic a fashion.<sup>1</sup>

During the next three months public criticism that the nation's civil defence measures represented over-insurance grew in scope and volume. It is difficult, with a knowledge of later events, to appreciate the strength attained in these weeks by the feeling expressed in the slogan 'turn on the lights and turn out the A.R.P. workers!' In a condition described by the Prime Minister as 'this strangest of wars, a sort of siege'<sup>2</sup> A.R.P. represented burdens and discomforts which were heavy, novel and impossible for the public to relate to any actual experience. The War Cabinet's announcement early in September of its intention to base its policies on the expectation of a three years' war had suggested to many that the air threat had been overrated.<sup>3</sup> And this scepticism was nourished by a growing confidence, due in part to official statements, in the capacity of the active defences to ward off any blow.<sup>4</sup>

The Government, confronted with this criticism, promised no more than amelioration of restrictions and adjustments in the light of experience of civil defence arrangements. But by December the Civil Defence Committee had become so disturbed by the nation's 'mood of easy optimism' and its effect on their preparations that they concluded that urgent action was required. In a review of the situation to the War Cabinet, which deserves fuller summary than this narrative can afford, they pointed out that complaints against one or other form of evacuation had now crystallised into general criticism of the whole policy of dispersal. Criticism of the black-out, of the size of the A.R.P. services and of the emergency hospital scheme all reflected a growing tendency for the public to question the need for precautions on the scale adopted. Fresh consultation

<sup>1</sup> *The Times*, 22nd September 1939.

<sup>2</sup> Guildhall luncheon, 9th November 1939.

<sup>3</sup> *The Times*, 11th September 1939.

<sup>4</sup> e.g., the Secretary of State for Air's review, H. of C. Deb., Vol. 355, Cols. 1067-74, 12th December 1939.

with the Air Staff had confirmed that these were, in fact, in no way excessive for their purpose. Nothing, that is to say, had occurred to prevent the German Air Force from delivering 2,000 to 3,000 tons of bombs for several days, or 700 tons a day for a period of weeks, on London and other cities.<sup>1</sup> If public opinion was allowed to maintain its present course the whole structure of civil defence might be 'so seriously impaired' that it would be impossible to rebuild it when attack became imminent.

The action requested by the Ministers was an early and clear pronouncement to the nation by a member of the War Cabinet, and preferably by the Prime Minister, of these facts. The situation, it must be emphasised, was a repetition in graver circumstances of one that had pervaded the pre-war years of preparation. The menace from the air, it has already been argued, had confronted British statesmen with a new dilemma or, if the reader prefers, with an old one in a new form. To warn the public constantly of the threat and reiterate its dangers might cause undue alarm, divert effort from normal activities including essential production and bring disagreeable political repercussions. Defence against it, however, meant civil organisation on a novel scale, based on the readiness to appreciate the risk and act accordingly of thousands of officials and ordinary citizens. A difficult balance had therefore to be maintained by those in authority between over and under-emphasis to the public of the danger or, to put the issue in other terms, between political and administrative needs.

Mr Chamberlain, in this vital matter, had always chosen the course of under-emphasis. And his difficulty, before the catastrophe, in understanding the character of Hitler's Germany persisted in the form of declining belief in the enemy's intention to undertake large-scale air assault on Britain.<sup>2</sup> But he agreed on the need for steps to bolster up the nation's morale and made a speech with this intention at the Mansion House on 9th January of the new year. In a brief reference to air attack he told his audience that he did not consider that this risk was over 'or even that it has diminished'; and he asked parents to leave their children in safe areas. He also warned the nation that it 'would have to face a phase of the war much grimmer than anything it had yet seen'.

This reminder, with other factors, helped to check the immediate danger to the civil defences, and to establish an equilibrium in the state of Britain's morale. The war remained in what Mr Churchill has called its 'sinister trance'; and boredom and apathy continued to be widespread. The Government and people were still 'out of tune with each other, the nation was divided within itself, men and women

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<sup>1</sup> pp. 282-284.

<sup>2</sup> See also K. Feiling, *op. cit.*, pp. 425, 445.

## CHAPTER VIII

### RESPIRE (Continued)

#### The Warning System Tested, and the Black-Out Modified

**H**IS MAJESTY'S ships in their home bases had the honour, fittingly enough, of being the first target for air attack on the British Isles since 1918. On 16th October about twelve German aircraft dropped bombs on warships lying in the Firth of Forth, killing or wounding twenty-five officers and sailors and damaging several ships. Two of the attackers were brought down by British fighters. The next morning a smaller attack was made on H.M. ships at Scapa Flow, and two high explosive bombs which dropped harmlessly on the Orkney Island of Hoy were the first bombs of the Second World War to fall on British soil.

The Firth of Forth attack provided the civil defence authorities with an incident of importance. Although no bombs fell on land, a good many splinters from anti-aircraft guns descended on Edinburgh and Dunfermline. And while the naval authorities in the area exercised the discretion they possessed to sound their own sirens, no public civilian warning was sounded and confusion and indignation resulted. Similar trouble, it may here be said, was later to arise in other naval co-ordinated areas such as Portsmouth; and to cause prolonged discussion between the Admiralty and the Ministry of Home Security before various local compromises were arranged.

More important was the evidence this attack afforded of the intense dislike of the public of being bombed—or nearly bombed—without a warning. In fact, some defect had developed in the local radar station; and the A.O.C.-in-C., Fighter Command, not being satisfied that an attack would be made on the mainland, had decided against issuing a 'red' warning. But the more general explanation which the Prime Minister had necessarily, for security reasons, to give Parliament was described by *The Scotsman* in a scathing article as 'particularly inept'.<sup>1</sup> Experience during the preceding six weeks had also shown that the public disliked (though less intensely) the opposite situation of being warned without being bombed; and that the system needed time and practice for its perfection. Peace-time exercises had been mainly confined to the passage of messages over the telephone, and had offered little practice to those responsible for

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<sup>1</sup> H. of C. Deb., Vol. 352, Cols. 691–3 and 904, 17th and 18th October 1939.

London 6 p.m. and 8 a.m. As a consequence of strong representations by various interests a proportion of theatres and cinemas in the heart of London were next allowed to remain open until 11 or 11.15; and on 1st December this permission (though on a staggered basis) was made general. The normal closing hour elsewhere had, in the meantime, been altered to 11. Dancing in public halls, after this hour, had been generally introduced (subject to the discretion of Chief Officers of Police) before Christmas. The owners of theatres and so on had been asked to take various A.R.P. measures on behalf of their patrons and staffs. And after much discussion it was decided that when a warning was received managers should personally announce the fact, permitting those who wished to leave to do so, but 'the show would go on'.

Football matches, 'the dogs' and horse racing in a total war, like theatre-going, set the authorities some novel problems. The Government reached agreement with the Football and Greyhound Racing Associations over arrangements which included severe limitation in evacuation areas of the number and times of matches and meetings and of the spectators permitted to attend.<sup>1</sup> The horse-racing programme, through voluntary action by the Stewards of the Jockey Club, was severely curtailed. As the winter began to pass with attack on the population still deferred, demands grew for the raising of the level (the lowest in their history) to which these sports had fallen. Considerations of safety began to assume less prominence, and those of morale and of hardship to different commercial interests to be strongly emphasised.

Early in the new year a limited reopening of museums and galleries was permitted, although their most valuable contents had been sent away to places of safety. Churches had, of course, exceptional difficulty in obscuring their lights; and mainly for this reason most of them throughout the country had ceased to hold their customary evening services and substituted services in the early afternoon.

## Evacuation of the Government

Evacuation and sheltering, it should be re-emphasised, were the two most drastic methods of defence, in terms alike of their potentialities for social and industrial dislocation, relationships with morale, administrative complexity and cost to the State. Evacuation, whether as a plan or an historical event, affected four main groups of citizens: (1) the nearly 4,000,000 children, mothers and invalids living in London and other cities whom the Government had arranged to remove, if they wished, at its expense to safer areas;

<sup>1</sup> *The Times*, 22nd September 1939.

(2) other individuals who chose to leave under their own arrangements; (3) business firms, schools and other private institutions, and (4) the Government, or Ministers, M.P.s and all employed as civil servants.

The dramatic exodus between 1st and 3rd September of nearly 1,500,000 official evacuees, their subsequent experiences in the reception areas and speedy return in large numbers to their homes have been recorded in detail in another volume of this series.<sup>1</sup> The novelty of this situation, in one aspect, is illustrated by the fact that some time elapsed before the Government was aware that it had not moved nearly 4,000,000 persons but less than half this number. The scale of private evacuation was unknown to the Government or to anyone else. But Mr Titmuss concludes that between June and early September 1939 this involved about 2,000,000 persons in England and Wales. He further concludes that these various large migrations 'directly affected the daily lives of from one-quarter to one-third of the people'.<sup>2</sup> The official exodus, it is important to note, was carried out in an orderly manner and without a single casualty or accident. And the unofficial one occurred in a steady flow spread over several weeks, and without panic.

Though the public, for obvious reasons, was little aware of the fact, the evacuation of the Government itself presented intricate administrative and political issues. By the outbreak of war the Office of Works had detailed plans in readiness to move the entire headquarters machine of Government, then consisting of some 60,000 persons, from London at short notice over a period of three or four days.<sup>3</sup> This machine was for this purpose carved up into two unequal parts. The seat of Government—the Cabinet, Parliament and the most essential officials to the number of some 16,000—would, if need arose, be evacuated in what was officially called the 'black move'. Less essential staffs of Departments, or some 44,000 officials, would be evacuated under a 'yellow move'. A few days after the country's entry into war the Government gave instructions for the accommodation for both these moves to be requisitioned, and for the 'yellow move' to be put into immediate operation. The Office of Works took over some 220 hotels, 30 public and other schools and various other buildings in the provinces; and branches of some Departments, for example the Admiralty and the Air Ministry, began to move out of London.

Experience showed after barely a fortnight the many practical difficulties to which these moves, projected or actual, gave rise. The

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<sup>1</sup> R. M. Titmuss, *op cit.*, Chapters VII–X.

<sup>2</sup> *Ibid.*, p. 137.

<sup>3</sup> p. 200. The Civil Service (non-industrial staff) was then approaching 400,000, about one half of this being G.P.O. staff.

transportation of only a few thousand civil servants, drawn from several Departments, had shown striking weaknesses of co-ordination. There had been serious muddles over billeting, and officials had been sometimes compelled to sleep in offices or share a double-bed. For other reasons, including separation from their families, they had already begun to voice protests. Departments in London had been, in various degrees, disorganised by the removal of their branches. And the owners of hotels, schools and other places which had been requisitioned but not yet occupied were beginning to lodge strong complaints.

A special inquiry into these problems suggested that there was much to be said for putting an immediate stop to the 'yellow move'. Administrative convenience, it was clear, prompted this course; and opposition by the staffs concerned had grown stronger. If, however, this action were taken, pressure on the part of owners of empty premises to take them back into use might become irresistible and many billets earmarked for official staffs might be lost. What perhaps weighed still more with the Civil Defence Committee was the picture presented to them of what might occur if the mass evacuation of the Government from London were attempted after heavy attack had begun. The exodus of thousands of officials, with even the most essential papers and records, would offer many practical difficulties; and its effect on public morale would probably be grave. This move, in fact, was one more necessary insurance. Though causing some current dislocation, it was providing valuable experience and might prevent possible future chaos. The War Cabinet decided in mid-October that it should be gradually continued, though subject to the decision of individual Ministers that their Departments would not lose seriously in efficiency.

Ministers then turned to earnest consideration of the practicability of the 'black move'. This, though in part still a plan, had already involved considerable official action and brought concrete political repercussions. Rising public complaints about hotels, buildings and billets standing empty over a considerable area of the Western Midlands could not, owing to the need for strict secrecy, be effectively answered. Certain Ministers and officials were losing faith in the policy of evacuation. Some Departments were pressing for larger representation in the seat of Government, and new ones with obvious claims in this matter were being formed. The Civil Defence Committee sought to discover whether the problem could be simplified by confining the move to one Midlands or Northern town. But strong insistence by the Air Staff on dispersal, and difficulties of accommodation, billeting and communications ruled out this alternative.<sup>1</sup>

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<sup>1</sup> The G.P.O. had been occupied for two years in installing communications in the 'black area' which, nevertheless, were very restricted compared with those normally available in London.

They made detailed adjustments in the plan; and modified security to the extent of permitting notices to be served on householders in the areas concerned, warning them that they might be required to accommodate Government staffs at twenty-four hours' notice. They reported to the War Cabinet that this move, though bound to involve 'very serious difficulties and loss of efficiency' was nevertheless a practicable operation. But they strongly urged that orders for its execution should not be issued until heavy persistent air attack had rendered the conduct of the nation's business in London quite impossible.

The 'yellow move', in the meantime, was continuing to prove a source of difficulties and embarrassment. The Minister of Labour and National Service, Mr Ernest Brown, visited some 1,300 members of his Department evacuated to Southport to investigate complaints about muddles over billeting, inadequate canteens and lack of provision for recreation and medical care. Weeks, it was alleged, had been spent in controversy with other Departments about whether official accommodation might be used for recreations. 'No one', Mr Brown reported, 'who has seen evacuation at first hand can have any doubt about the need for the appointment of sufficient welfare officers', and added 'one of the most burning questions is the matter of visits home'. The Minister of Health (with his wider responsibilities in this matter) concluded that Government staffs in general deeply disliked the policy of evacuation. Most of those already evacuated were low-paid workers and many were women or young girls, who were unable to live anything like their normal lives. He feared that the efficiency of the Government machine would be prejudiced by further moves, and proposed that abandonment of the whole process, at least until attack on London had begun, should be considered.

This problem, important in itself, was related to the almost spectacular return of the officially-evacuated mothers and children to their homes in London and other cities. This strong, human, ebb-tide must be regarded as the main expression of the public scepticism about the danger to which attention has already been drawn.<sup>1</sup> By Christmas more than one-half of the 1,500,000 mothers and children concerned had returned home; in the London and Liverpool areas about two-thirds of the evacuated children had returned.<sup>2</sup> It had been apparent for some time past to the Government that this evacuation scheme had, as Mr Titmuss says, 'largely failed to achieve its object of removing for the duration of the war most of the mothers and children in the target areas'.<sup>3</sup> But being

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<sup>1</sup> pp. 296-299.

<sup>2</sup> The first count taken in January 1940 disclosed that about 900,000 had returned.

<sup>3</sup> R. M. Titmuss, *op. cit.*, p. 172.

convinced that this scheme should rest on a voluntary basis, they had been unable to hinder the steady drift back. The whole policy of evacuation had, in consequence, begun to seem inconsistent and confusing to the other sections of the community involved. For example, many business firms had been returning their headquarters' staffs to London, and the business community in general was agitating for firmer official guidance in this matter.<sup>1</sup>

This wholesale criticism, it has already been noted, led the responsible Ministers to remind the War Cabinet that evacuation was an integral part of civil defence policy; and to suggest a clear statement by the Prime Minister to the nation that the danger remained as grave as ever.<sup>2</sup> Mr Chamberlain's Mansion House speech of early January succeeded in restoring a certain equilibrium. The ebb-tide of mothers and children continued, but at a slower rate.<sup>3</sup> The Government announced in February that they proposed to maintain a voluntary scheme of this nature, but that this would in future be confined to a limited number of schoolchildren and would not be brought into operation until serious attacks had developed.<sup>4</sup> Business firms were left, as before, to decide for themselves between the claims of safety and efficiency; but many, though impatient over the difficulties of carrying on 'somewhere in the country', showed less inclination to return to the cities.

The Government staffs already sent to the provinces had received public assurance that the hardships they were undergoing were still the outcome of strategic need. Ministers were satisfied in February that their living and working conditions had genuinely improved. Welfare officers had been appointed, medical care at reasonable cost made generally available, more canteens provided and visits home at reduced fares arranged. And Ministers asked the Treasury to continue pressing Departments to speed up the evacuation of their less-essential staffs. Yet it was characteristic of this phase of the war that inconveniences which, seen from a later perspective, appear trivial caused much dissatisfaction. Soon afterwards the Staff side of the National Whitley Council complained vigorously about the conditions of evacuated staffs—still only numbering 20-25,000—and maintained that these had no confidence in the general scheme. A few weeks later, when a new phase of the war was starting to transform the issue, the first substantial financial concessions to these staffs, which included help with the movement of their families to reception areas, were introduced.

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<sup>1</sup> *Annual Register*, 1939, p. 127.

<sup>2</sup> p. 298.

<sup>3</sup> The unaccompanied schoolchildren in the reception areas fell from 420,000 at the beginning of January to 347,000 on 31st March and about 254,000 in May.

<sup>4</sup> Ministry of Health Circular, 15th February 1940.

## Anti-Gas Defence, and Shelters

Mention has already been made of the Government's statement in April 1939 that the degree of protection by then attained against this danger had 'rendered the risk of gas attack less likely'.<sup>1</sup> It can be asserted with confidence that in the following September Britain's defences in this sphere much surpassed those of any other nation, including Germany. The data available to experts had suggested that a high degree of protection could only be reached by equipping every civilian with a gas-mask. In Germany the gas training of the civil defence forces, arrangements for treating gas casualties and the gas-proofing of shelters and other places had proceeded far. But on the outbreak of war only about 12,000,000 respirators had been issued to civilians, and progress in adding to this total proved slow. Priority for the *Wehrmacht*, difficulties over rubber supplies, and official reliance on gas-proof shelters combined to deprive German civilians, including many in the principal cities, of the personal protection of a mask throughout the five and more years of war.

Gas, in the general sense of the term understood in this volume, was clearly an imponderable factor. The reader is aware that it was never, happily, used against civilians. The historian may therefore here anticipate events by putting two questions, the first of which lies somewhat outside his proper province. How far did Britain's defence on the outbreak of war and later deter Germany from using this weapon against her? It will be assumed throughout this volume that Hitler and Goering's restraint in using any weapon cannot be attributed to motives of humanity, but solely to fear of reprisals or calculation that the aircraft and crews available could be used to better advantage in some other way. On this assumption, and taking into account Allied investigations after the war, it would seem that the deterrent effect was considerable to the point, perhaps, of being decisive.

What, secondly, was the impact of Britain's defence of this kind on British morale? The individual's possession of a mask and his knowledge of widespread anti-gas preparations could, of course, arouse in him the opposite emotions of despondency or hope. Yet there appears to be good evidence for concluding that the Government's early investment in this sphere contributed powerfully to sustaining morale both during the Munich crisis and again on the outbreak of war a year later.<sup>2</sup> As the twilight war proceeded the authorities were concerned first to correct the too close identification by the public of aerial attack with gas, and then to maintain this type of defence at an adequate level.

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<sup>1</sup> p. 209.

<sup>2</sup> pp. 161-165.

Every British adult civilian, for the first time in history, entered war with an article of personal defensive equipment. The distribution of gas-masks begun at Munich to all citizens over about five years old had been virtually completed by mid-September 1939; and embraced the inmates, for example, of casual wards, prisons and Borstal institutions. The total distribution of this civilian mask, in three sizes, had reached about 44,000,000; and the Ministry and local authorities were adding to and storing reserve supplies.

On the outbreak of war issue of the baby's anti-gas helmet was only beginning; and that of the respirator, known as the 'Mickey Mouse', for infants of two to about four-and-a-half years had not started.<sup>1</sup> But in the following months the issue of both these articles made rapid progress. By late October a large proportion of helmets had been issued, and a special distribution was under way to mothers who had brought their evacuated children back to the cities. The Ministry advised local authorities to ask women wardens to arrange, whenever possible, the exchange of helmets for children's masks.<sup>2</sup> This, the mothers should be told, would make their task much easier by relieving them of the need to supply their babies encased in helmets with air by pumping this through bellows. By the end of January 1940, the essential issue of helmets, to a total of some 1,400,000, had been completed; and enough children's masks, or about 2,000,000, had been distributed to cities and towns.

Possession of masks (which remained the property of the Government) endowed citizens with some positive duties. The Government, though they had taken no steps to introduce compulsion in this matter, had made it plain that they expected every citizen to carry his mask wherever he went. With Cabinet Ministers and others in high places setting an example, and most employers adopting a firm attitude over this matter to their staffs, the buff cardboard container became almost overnight the accepted appendage of the British citizen in war.

Inevitably, individual habits, including the habit of carelessness with public property, soon began to assert themselves. Women quickly replaced the drab official container with a large assortment of more decorative receptacles. Members of both sexes left their gas-masks at home and carried other articles in their haversacks or containers. Complaints arose that police and wardens in safe areas were unduly pestering small children and others caught separated from their masks. The Home Secretary announced in October that the Government no longer regarded the carrying of masks in reception areas as essential, but still strongly advised everyone

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<sup>1</sup> pp.232-233.

<sup>2</sup> A.R.P. Dept. Circulars 271 and 280, 10th October and 9th December 1939.

elsewhere to continue this practice.<sup>1</sup> Instructions, in the meantime, were multiplying about the citizens' duties over care and maintenance. Early in 1940 the Ministry proposed an immediate inspection by wardens of all civilian masks, and asked that such inspection should develop into a monthly routine. They introduced a charge to the citizen for the replacement or repair of a mask lost or damaged through his negligence.<sup>2</sup> In February they consolidated the guidance to local authorities and the public about care and repair in a new memorandum; and asked every scheme-making authority to establish a local depot, in charge of a qualified instructor, to repair masks and oilskin clothing.<sup>3</sup>

Precautions against gas and other forms of attack were not restricted to *homo sapiens*. Before the war the Home Office had published full advice about A.R.P. for animals.<sup>4</sup> This recommended, among other things, that all animals in the danger zones should be evacuated; that stables and similar places should be gas-proofed, indoor pets be given gas-proof boxes, and the legs of contaminated animals treated with anti-gas ointment. The People's Dispensary for Sick Animals had formed an 'Animal A.R.P. Service', and evolved a gas-proof kennel fitted with bellows to be operated by its dumb occupant. Clearly, however, there were practical limits to solicitude of this kind. The London Zoo, for example, had been temporarily closed on the outbreak of war; and the newspapers reported its keepers to be 'visibly affected' by the destruction of poisonous snakes.<sup>5</sup>

The distribution of other supplies besides civilian masks and anti-gas training still occupied much of the authorities' attention. Supplies of Service and Civilian Duty masks, though improving, were still far from adequate. The special modification of the latter type for the use of switchboard operators, evolved in 1938 and now called the 'telephone respirator', was being issued.<sup>6</sup> Equipment such as metal triangles, rattles and the yellow detector paint to detect blister gases had still to be distributed in some areas. Further supplies of bleach powder and anti-gas ointment had to be issued.<sup>7</sup> In most areas much had still to be done to adapt and equip rooms as public cleansing stations. Wardens were continuing to instruct themselves and the public about gas matters. The Rescue and Decontamination

<sup>1</sup> H. of C. Deb., Vol. 352, Cols. 501-2, 12th October 1939.

<sup>2</sup> H.S.C.s 40, 47/40, 6th, 14th March. The citizen was already liable under the Civil Defence Act to a fine of £5 for failing to use reasonable care in preserving his mask.

<sup>3</sup> Memorandum No. 13; H.S.C. 24/40, 22nd February.

<sup>4</sup> Memorandum No. 12, August 1939.

<sup>5</sup> *The Times*, 9th September 1939.

<sup>6</sup> p.141; A.R.P. Dept. Circular 320, 6th December 1939.

<sup>7</sup> H.S.C.s 1 and 7, 2nd and 10th January 1940; p. 235.

Services were practising in anti-gas clothing, and the casualty services preparing for large-scale gas casualties.

Further steps were taken in September to enlist persons in what was called the Gas Identification Service. The Government appointed a Senior Gas Adviser to each Region, and asked all scheme-making authorities to act immediately on the proposal, first made about two years earlier, that they should appoint Gas Identification Officers.<sup>1</sup> It was hoped by this means to form a small corps of 1,400 experts, drawn from universities and elsewhere and serving part-time without pay, continuously available to identify known or detect strange gases. These were to receive A.R.P. training, and be supplied with full protective clothing and various kinds of special equipment.<sup>2</sup>

Early in 1940 the Government received reports that the Germans had found a method of using arsine gas (arseniuretted hydrogen) in the aerial bombardment of civilians. Since only the Service masks offered full protection against this gas, the Government ordered the supply of 70,000,000 filters of an improved type for Civilian Duty, civilian and children's masks.<sup>3</sup> In May the first of these—known as 'contex' since they formed small extensions to existing containers—were distributed to local authorities, and wardens began the considerable task of fitting them to the millions of masks in the possession of the public.<sup>4</sup>

While the problem of anti-gas defence was becoming in large part one of maintenance, it was far otherwise with shelters. Certain Regional Officers had reported something like panic by authorities over this problem in the last days of August 1939. The spur of war greatly increased activity in this sphere; and it was said in Parliament in November that London had been provided 'with thousands of shelters since the outbreak of war, shelters which there were all sorts of difficulties in providing in the weeks before'.<sup>5</sup> Yet the large diversified shelter programme was far from complete; and it soon began to seem, as another Regional Officer expressed it, that shelter construction might go on for ever.<sup>6</sup>

No activity in civil defence—since the Government had asked all engaged on any kind of essential work to 'stay put'—was now probably more important. And none better illustrated in practice the Government's leading principle that the burden of civil defence must be shared. The Home Secretary reaffirmed in September the

<sup>1</sup> A.R.P. Dept. Circular 252, 21st September 1939.

<sup>2</sup> Memorandum No. 11, October 1939; A.R.P. Dept. Circulars 273 and 316, 12th October and 13th November 1939.

<sup>3</sup> A contract had previously been placed for 50 millions at an estimated cost of £403,000.

<sup>4</sup> H.S.C.s 84, 94, 11th, 18th May 1940.

<sup>5</sup> H. of C. Deb., Vol. 352, Col. 2170, 2nd November 1939.

<sup>6</sup> pp. 289-291.

basic policy of providing moderate protection to as large a number as possible in what, at this time, amounted to a liberal interpretation of the threatened areas. Though the central authorities still played the leading role by establishing standard designs and prices, allocating materials and supplying a proportion of the shelters, the burden of practical effort now lay with the local authorities, employers of all kinds and the public.

Since the matter was essentially technical and relatively new its administrative problems loomed large. The Ministry still nominally examined and approved all London's shelter schemes, all those for the other Regions costing more than a limited sum, and a large number of special cases such as the project (which aroused much public interest) for using Southwark Tunnel as a shelter. In practice it was compelled to delegate substantial responsibility in this sphere to Senior Regional Officers, who possessed limited powers of financial approval, and Regional Technical and Works Advisers. The Regional Commissioners soon confirmed the impression that shelter activities had much increased, but expressed anxiety over administrative obstacles. Many local authorities had inadequate or insufficiently trained staffs for this work. The county boroughs had, naturally, made most progress, but numbers of these preferred their own designs and arrangements to those centrally prescribed. A steel-producing town on Tees-side, for example, insisted on cast-iron shelters and using sandbags instead of brickwork from the conviction that the war could not last for three years.<sup>1</sup>

Many difficulties were arising through the varied manner, alluded to earlier, in which counties delegated powers to districts. In Leeds Region, for example, one of the two counties delegated powers over domestic shelters to districts while retaining control over public shelter construction; the other first delegated powers over both and later recalled them. For this and other reasons much controversy over the division of financial responsibilities was accumulating for the future. Regional Officers, under considerable pressure at this time and sometimes inexperienced, were later to discover that many authorities had spent 'alarming sums' over shelters during this phase by misunderstanding official instructions or without, they alleged, seeking Regional sanction.

The provision of enough 'Andersons' to give at least 12,000,000 of the poorest inhabitants of the target areas shelter in their own homes was still the Government's first aim; and the 1,500,000 or so delivered by the outbreak of war fulfilled under two-thirds of this plan.<sup>2</sup> New applications from the public for 'Andersons' had, once war began,

<sup>1</sup> Middlesbrough which, it so happened, was the first industrial centre to be bombed (on 25th May 1940).

<sup>2</sup> These figures were theoretical in the sense that it was improbable in fact that the shelters would be filled to capacity.

flowed in to the authorities and been transmitted by these to Whitehall. The Home Secretary said that deliveries to local authorities had been fairly consistent at 50,000 a week for some weeks;<sup>1</sup> but he could not forecast any date for completion of these or agree to extend free distribution to persons with incomes of over £250 a year.<sup>2</sup> At the end of October the Government fulfilled their promise to put a limited number on sale to the public of London and about fifty other towns. These cost from £6 14s. od. to £10 18s. od. and could be bought on the instalment system.<sup>3</sup>

Not only had the time factor now become more than ever important. With the nation at war the priorities for labour and materials formerly accorded to shelters of all types no longer obtained, and prices as well as supplies of essential materials began to show large fluctuations. Demands for steel for other civil defence needs, such as the galvanised sheets used to black-out factories, compelled the Ministry to reduce the size of some 'Andersons'. The type so far produced (henceforth to be known as the 'standard') was 6 ft. high, 4 ft. 6 in. wide and 6 ft. 6 in. long and included six curved steel sheets. It was now regarded as adequate for six persons and could be enlarged by adding more sheets to hold ten persons. The Government also began to issue a number which were only 4 ft. 5 in. long, with a capacity of four persons.<sup>4</sup> This reduction had important consequences when, contrary to official expectations, raids took the form of all-night attack and the occupiers of 'Andersons' wanted to lie down in them to sleep.

By early 1940 the competition for steel for different purposes was becoming acute, and the rate of production of 'Andersons', already reduced, had to be halved. The Joint Production and Materials Committee began to exert strong pressure on the Ministry of Home Security to reduce the amount of steel being used for shelters of all types.<sup>5</sup> They proposed that the allocation of steel for 1940 to the Home Office and its offspring Ministry for all building and A.R.P. purposes should be reduced from their requested 670,000 tons to 100,000 tons; and delivered what the Home Secretary called a bolt from the blue by suggesting that the manufacture of all 'Andersons' should cease. The Ministerial Priority Committee, in reviewing the problem, granted an allocation of 334,000 tons; but they also considered that the manufacture of 'Andersons' should stop. In the middle of April the production of 'Andersons' of all sizes, and of basement fittings, was therefore suspended.

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<sup>1</sup> H. of C. Deb., Vol. 352, Col. 2263, 2nd November 1939.

<sup>2</sup> H. of C. Deb., Vol. 351, Col. 1195, 26th September 1939.

<sup>3</sup> A.R.P. Dept. Circular 287, 28th October 1939.

<sup>4</sup> A.R.P. Dept. Circular 281, 21st October 1939.

<sup>5</sup> The chairman even questioned the need for more shelters of any kind.

A considerable share of this part of the programme was, nevertheless, fulfilled. In the course of the next few months the total number of 'Andersons' sent to the danger areas reached over 2,300,000, which could shelter a maximum of 12,500,000 persons. The majority were the 'standard' six-person shelters, about 500,000 were of the smaller four-person type, and 100,000 or so of the larger type.<sup>1</sup> The general public, it is of interest to record, had not shown much interest in the scheme for buying 'Andersons', since when production stopped they had bought somewhat under 1,000 of these.

The 'Anderson' could provide no solution for working-class homes which had no kind of yard or garden. Though in target areas as a whole such homes formed a small proportion, in some districts of London and other cities they were numerous. The satisfaction with shelter progress voiced in Parliament in the previous November was qualified by criticism that not enough had been done to protect the working-class flats of London.<sup>2</sup> Westminster, for example, being unable to use many 'Andersons', had provided domestic shelters in the vaults and cellars underneath the pavements of Pimlico and elsewhere.<sup>3</sup> Leeds, Huddersfield and other cities contained many rows of terraced houses which could only be protected by strengthening cellars. But no general solution had so far been found for the protection of these miscellaneous types of buildings. This need, combined with cessation of the production of 'Andersons' and basement fittings, now compelled the Government to place the main emphasis in the sphere of domestic shelter on brick and concrete surface structures.

Before the war the Government had recommended provision of shelters of this type for individual homes or a few adjoining homes, and had undertaken to reimburse the costs of materials needed for these.<sup>4</sup> For various practical reasons few such shelters had in fact been built. In March 1940, by an extension of this idea, they introduced what they called by the cumbrous name of 'communal domestic surface shelters', sometimes shortened to 'communal shelters'. These, though similar in design to the former type, were to be built to protect forty-eight persons living in groups of adjoining houses and to stand in the middle of the street.<sup>5</sup> They became, in course of time, a significant example of the Government's basic plan to provide the fullest possible amount of domestic shelter and avoid the congregation of large numbers of shelterers in one place.

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<sup>1</sup> The exact total distributed before the heavy raiding of September was 2,300,878; of these 1,661,275 were 'standard', 507,688 small, and 131,915 large.

<sup>2</sup> H. of C. Deb., Vol. 352, Cols. 2160-2278, 2nd November 1939.

<sup>3</sup> W. Sansom, *Westminster in War* (1947).

<sup>4</sup> A.R.P. Dept. Circular 102, 5th May 1939; pp. 196-197.

<sup>5</sup> H.S.C. 38, 4th March 1940. They were also sometimes given the less misleading official name of 'multiple unit domestic shelters'.

Though tremendous activity was reported from most of the country over public shelters, a great deal had still to be done to achieve the aim of providing these for some 10-15 per cent. of the inhabitants of the most threatened cities.<sup>1</sup> It was considered by officers of Birmingham Region 'that the quickest way to perform this most urgent task was to adapt every available basement, or to construct trenches and line them with timber, steel or concrete. Obviously all shelters had to conform to certain standards, and all proposals had therefore to be submitted to Regional Headquarters to check these details and consider whether the costs were reasonable. It was a time of innumerable meetings, visits, inspections and telephone calls, when quick decisions were asked for and given, although perhaps not always carefully recorded in writing. On the whole, good relations were established with local authorities, a number of which proceeded with energy, some with discretion, and a few with apathy'.

No complete picture could be formed in Whitehall for a long time to come of the results of these complex activities being carried on in twelve Regions. In November, however, the Ministry considered the rate of progress to be unsatisfactory. Public shelter had perhaps been provided for nearly 2,000,000 of the 27,500,000 persons in the specified areas, though work was in hand to protect 1,300,000 more. In the County of London such shelter was ready for 520,000 persons, and work still proceeding represented provision for a further 300,000. The pace and the quality of local performance showed infinite variation. The city of Birmingham, for example, had public shelters in readiness for about 5 per cent. of its population, an important East Anglian town had made slight progress, and the authorities in Cambridge (among other places) had taken no action whatever. Severe winter conditions later caused many delays, and in many areas supplies of bricks, timber and concrete proved very short. By the spring, nevertheless, certain Regional Officers reported that 80 per cent. of their public shelters had been completed. Though the calculation of Birmingham Region that 50 per cent. of these shelters were ready was probably nearer the truth as regards most of the danger zones.

By telling the Government in the first days of war that they hoped to build trenches for 1,000,000 more persons the local authorities had shown their continued reliance on this type of shelter. Trenches could be speedily built, and the public showed preference for shelters which were both underground and in the open. The Government then began an attempt to make good their promise to supply pre-cast concrete trench linings, and this move is of historical interest as an example of the administrative difficulties to which the

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<sup>1</sup> p. 290.

## CHAPTER IX

# THE THREAT REDOUBLED

(May – August 1940)

### The New Scale of Attack, and Invasion

THE twilight war—and with it the general scepticism about air attack—ended abruptly with Germany's invasion of Denmark and Norway on 9th April. British naval, land and air forces were all strenuously engaged, and for the civilian at home the war had at last come to life. But a series of disasters quickly followed, causing much disquiet over the higher conduct of affairs. On 10th May Germany, through the avenue of the Low Countries, began her long-postponed attack on the West. The same day Mr Churchill became Prime Minister and formed an all-party administration. Addressing the House of Commons, for the first time in this capacity, on 13th May he said, 'We are in the preliminary stage of one of the greatest battles in history', and continued, 'I have nothing to offer but blood, toil, tears and sweat'.<sup>1</sup>

As the German armies made lightning progress it became clear that the threat to Britain had redoubled. The danger of all-out air attack became merged in the greater danger, so remote in experience as to be hard to conceive, of actual invasion. And large-scale assault on civilians and factories from the air was shown to be only one item of strategy in a war which was rapidly abolishing all distinction between military and civilian objectives. The German Air Force, for example, obliterated the centre of Rotterdam on 14th May, killing about 1,000 people, as one item of its activities in support of the army.<sup>2</sup> Enemy parachutists and airborne troops were landing far behind the defenders' front-lines. And German pilots were not hesitating to bomb and machine-gun civilians on the roads as a method of blocking military traffic.<sup>3</sup>

In a broadcast on 19th May Mr Churchill warned the British people of the new situation confronting them:

There will be many men, and many women, in this island who when the ordeal comes upon them, as come it will, will feel comfort, and

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<sup>1</sup> H. of C. Deb., Vol. 360, Col. 1502.

<sup>2</sup> It was at first reported that no less than 30,000 persons had been killed at Rotterdam.

<sup>3</sup> See e.g., C. D. Freeman and D. Cooper, *The Road to Bordeaux* (1940).

even a pride—that they are sharing the perils of our lads at the front—soldiers, sailors and airmen, God bless them—and are drawing away from them a part at least of the onslaught they have to bear.<sup>1</sup>

A week later, on the day before the decision was taken to withdraw the B.E.F. from France, the Chiefs of Staff reviewed the nation's prospects on the assumption that French resistance would collapse. There were three ways, they affirmed, in which Germany could defeat Britain—unrestricted air attack aimed at breaking morale, starvation through attack on our shipping and ports, and occupation by invasion.

The crux of the problem lay in Britain's air defences. If France fell, the Germans would be free to concentrate their whole air force against this country. This was thought to consist of nearly 2,000 long-range bombers, 550 dive-bombers, 1,550 heavy and light fighters and a number of coastal aircraft; and facilities for expanding this force would be greatly increased. Enemy occupation of Norway had already exposed north-east Scotland, with its naval bases, to a larger scale of attack. The greater catastrophe would enable the enemy, from bases stretching from Norway to Brittany, to send long-range bombers against any part of the British Isles, including the approaches to all West Coast, Scottish and Irish ports. Dive-bombers and long-range fighters could penetrate England to a line drawn from Cardiff to Grimsby, and short-range fighters could reach the Home Counties. The enemy's ability to concentrate a very large number of bombers, with fighter escort, over a big area of Britain, including the industrial Midlands and all probable landing-areas on the coasts, would constitute a threat the seriousness of which could not be overstressed.

To counter these formidable forces Britain could muster a home-based fighter force of rather more than 700 first-line aircraft, backed by about 230 in reserves immediately available. The production of fighters was not keeping pace with losses, and much of this was concentrated in two cities, Birmingham and Coventry. Although aerodromes and landing grounds were well dispersed, the R.A.F. ground organisation had serious weaknesses in relation to the new scale of attack. What had now become its flanks had inadequate radar cover; and balloon protection was insufficient even for vital points. The tactics and equipment of defensive night-fighting were still rudimentary.

The nation's morale, the Chiefs of Staff affirmed, would under the circumstances they were considering be subjected to a far heavier strain than ever before. As regards civil defence, they stated that as long as 'the present quasi-peacetime organisation' continued there

<sup>1</sup> Charles Eade (Ed.), *The War Speeches of the Rt. Hon. Winston S. Churchill* (1951), Vol. I, p. 184.

it touches nothing which it does not minimise'.<sup>1</sup> The point to be emphasised in the present context is that it covered events ranging in significance from the destruction by enemy bombs of two foxes to the major disaster in March 1943 at Bethnal Green underground station, when 178 people were killed and 62 injured.

During the month which followed 10th May air attack was described by the Ministry of Home Security as more systematic. Bombs, both high explosive and incendiary, were dropped by single or a few enemy aircraft on seven nights. The total was calculated at about 240 H.E.s and 700 I.B.s. The targets were still predominantly on the eastern and southern coasts. Some military objectives, for example at Southampton, were machine-gunned. Only ten or so civilians were injured; and the damage caused was very slight. Middlesbrough was the first industrial town, and Dorman and Long's works the first industrial plant, to be bombed. Catterick was the first airfield to be attacked, and Northallerton the first place on Britain's railway system to suffer damage.

During the next month, from early June to early July, the enemy became more persistent. Raids, though still minor in terms of their effects, were more frequent and more widely spread. From 18th June they began to take place every night, and in early July by day as well. East Anglian airfields, some Midland industrial areas and Aberdeen were now included as targets. On 19th June Cambridge was the first English town (apart from the Clacton episode) to report a serious incident, with nine fatal casualties. On the same night Croydon was the first town in London Region to be bombed. On 28th June the enemy bombed the Channel Islands by daylight, killing thirty civilians and injuring forty. A determined attack by twenty aircraft, which caused some damage, was made on Portland Dockyard on 4th July.

During this month over 2,000 H.E.s and about 5,000 I.B.s were reported. The majority of the former were of the 50 kg. type, with the 250 k.g. type next in importance. A considerable number of bombs had failed to explode; and some delayed-action and some whistling bombs had been used. The toll in human fatality was 150 persons killed and 640 injured. Material damage, though not negligible, was considered by the experts to be slight in relation to the tonnage of bombs delivered. And the accuracy of the enemy's bombing was a good deal lower than had been expected.

## Evacuation

The threat, as distinct from the attacks, introduced in May caused large complications, both human and administrative, regarding

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<sup>1</sup> John Strachey, *Post D.* (1941).

evacuation. Though the schemes, and their consequences, for official evacuation of private citizens in this phase have been fully described by Mr Titmuss, some brief attention to them is required here.<sup>1</sup> The new scheme for official evacuation, now limited to 670,000 children, from London and other target areas announced in February had met with a poor response.<sup>2</sup> The onrush of events in May not merely upset the greater part of this scheme but compelled the Government to order the removal from the new danger areas on the south and east coasts of the London children who had been evacuated there. During May and June about 25,000 children of this class were removed from the coasts of East Anglia, Kent and Sussex.

The next stage was the removal, in all from thirty-one towns, of children who normally lived in these areas to South Wales and the Midlands. This was on a voluntary basis though it was encouraged by the closing of all State schools. New plans to evacuate children of school age, unaccompanied by their mothers, were then hurriedly recast, first for London and Thames-side and then for towns on the south and north-east coasts. By 1st August roughly 213,000 children had been moved from these centres to safer areas. At the end of June a new scheme for moving mothers with children under five years old was introduced. This was known as 'assisted private evacuation', since the onus of finding accommodation lay with the parents while the Government provided free travel vouchers and billeting allowances to the householder.

The main fact which concerns this narrative is the small response of parents affected by this offer until the bombing of London began in September. Most of those, Mr Titmuss concludes, who took advantage of it lived in the coastal areas; and 'during July and August, when the Battle of Britain was being fought and daylight raids were made on many towns, there was no significant demand for the evacuation of children to safer areas'.<sup>3</sup>

The story of movement, and lack of movement, by private citizens during these months must include a few further facts. A considerable number of British parents, according to the same authority, sent their children overseas under the official arrangements which ended abruptly with the sinking of the *City of Benares* on 17th September.<sup>4</sup> About 30,000 civilians from the Continent, a further 29,000 from the Channel Islands and some 10,500 Gibraltarians entered Britain before the end of the year.

Business firms were advised by the Government late in May to

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<sup>1</sup> R. M. Titmuss, *op. cit.*, Chapter XIII.

<sup>2</sup> p. 328.

<sup>3</sup> R. M. Titmuss, *op. cit.*, p. 248.

<sup>4</sup> By 15th August the Children's Overseas Reception Board had approved applications for 19,365 children, 99 per cent. of whom were attending State-aided schools.

take the opportunity of the lull to evacuate staffs from London, though with the familiar proviso that such action should not be taken if it would cause a serious loss of efficiency.<sup>1</sup> Some weeks later, when the policy of eliminating all unnecessary movement was clearly established, the Government discouraged business or other large-scale private evacuation; and emphasised that there was now no intention, except in the case of extreme necessity, of moving the seat of Government from London.

The interaction of the different types of evacuation on the psychological plane had always been evident to those concerned with the problem in Whitehall. By this stage of the war the interaction of evacuation of business firms and of Government staffs had become more pronounced on various other planes. Growing sections of industry, for example, were at work for the Government and the Supply Departments naturally wished their representatives to be close at hand. In spite of changes of policy in this matter, to be noticed later, it seems probable that the movement of firms of any size out of London slowed down. 'The scale of private evacuation' (which of course included more than business), states Mr Titmuss, 'diminished as the war went on at least as markedly as did the volume of official evacuation, and possibly in greater measure.'<sup>2</sup>

The removal of the seat of Government or the 'black move', which had hitherto caused such complications, was now abandoned.<sup>3</sup> And it is of interest to record that British Ministers were impressed by the highly unfortunate consequence of the moves of the French Government from Paris to Tours and thence to Bordeaux, both for French morale and for the conduct of official business. The new strategical situation, with the German Air Force establishing bases on the Channel coast, made it obvious that the West Country had become vulnerable to air attack. It was decided that if the Government should be driven out of Whitehall by such attack they would move temporarily to other quarters within the defended area of London. The accommodation earmarked in the West Country was to be used for military and other staffs not required in London.

The problem of evacuating the less-essential Government staffs (the 'yellow move'), which had caused almost equal complications, was now, in its largest administrative and political aspects, resolved.<sup>4</sup> Under the altered conditions the opposition both of certain Ministers and of the majority of the staffs involved appears to have melted away. It became necessary to speed up this type of evacuation for two additional reasons—the great difficulty of finding accommodation

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<sup>1</sup> pp. 327–328.

<sup>2</sup> R. M. Titmuss, *op cit.*, p. 356.

<sup>3</sup> pp. 326–327.

<sup>4</sup> pp. 327–328.

householders in May in the form of a booklet, *Your Home as an Air Raid Shelter*.<sup>1</sup> This stated that an ordinary soundly-built house would offer very substantial protection; and it gave those unable to build some form of shelter much detailed guidance on the preparation of refuge rooms, the protection of windows and so on. In contrast to the similar but more simple instructions issued at Munich, this, since all adults and children now possessed gas-masks, placed little emphasis on the need for householders to gas-proof their rooms.<sup>2</sup>

In the full-dress debate of 12th June Parliament again showed predominant interest in shelters, though security (in its special sense) now imposed a definite restraint on discussion of this topic.<sup>3</sup> Sir John Anderson stated that the original shelter programme which, as Lord Privy Seal, he had launched in December 1938 had now been achieved.<sup>4</sup> Sufficient shelter of the blast and splinter-proof standard was in readiness up and down the country for some 20,000,000 persons—and he justly claimed this to be ‘an outstanding fact’. The central and local authorities had fulfilled their original plans for domestic and public shelters. In the 12,000 factories concerned, and also to a large extent in the mines, shelter schemes had been put into full effect. The Government had completed the standard shelter for their numerous offices in the danger zones. Eight months of respite had given the Research and Experiments Department the time for much further experiment, and also provided Regional staffs and local authorities with valuable experience. But though the original aims had been reached, the sights had now been set higher. The Minister stated that the Government were still pressing forward to improve upon the existing provision, to speed up distribution and to fill various gaps.

He then proceeded to deal with the matter which, it seems undoubted, had been the most controversial issue in civil defence since Munich. The plans for evacuation had since early in 1939 won the confidence of the public; and these, under the unforeseen conditions of months of immunity from attack, had in fact proved too comprehensive. But the Government’s basic shelter plan—the provision of widespread, but only moderate, protection—had from its inception been regarded in some quarters as misconceived and totally inadequate. In the six months preceding war the demand for some system of ‘deep’ or ‘strong’ shelters had been steadily growing, and after a few months of war this had begun to revive.<sup>5</sup> In December 1939 the unofficial A.R.P. Co-ordinating Committee, which led the

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<sup>1</sup> H.S.C. 98/40, 22nd May 1940.

<sup>2</sup> p. 163.

<sup>3</sup> H. of C. Deb., Vol. 361, Cols. 1277–1354.

<sup>4</sup> pp. 170–171.

<sup>5</sup> pp. 198–199.

attack on the Government over this matter, had put forward a method of greatly strengthening shelters which came to be known as the building of 'two-stage shelters'.<sup>1</sup> The Government, though not entirely excluding this plan, had emphasised that the immediate necessity was to concentrate on the programme already in hand. Sir John Anderson claimed in the debate just referred to that the Government's basic policy had been fully justified. Had they, he stated, adopted the deep shelter proposals, 'we should at this moment have been in a far worse position . . . than we are today. The country would have been caught with a very limited amount of shelter in course of construction and not completed'. He had again consulted both employers and workers on this issue; and the workers had expressed a definite reluctance to be given better shelter than that available to their families. The experience, already considerable, of warnings was suggesting that the original estimate that anyone would have from 5 to 7½ minutes in which to reach shelters was a good deal too optimistic. The public was also about to be issued with stirrup pumps, in the hope that they would take an active part in preventing fires. And the Minister referred, more openly than he had hitherto done, to the Government's earnest desire to avoid the creation of a 'deep shelter mentality'.

This issue was to revive in new and stronger forms after some months' experience of heavy raiding.<sup>2</sup> But it was, for the time being, closed by the Government's statement early in July that there was no longer time to undertake the construction of any 'two-stage shelters'.<sup>3</sup> The second (or war-time) phase of shelter provision was at this date about to close, and the first phase of widespread shelter use was about to open.

### The Services: the First Taste of Action and of Compulsion

The A.R.P. Services, which in the last resort were but a cross-section of the nation's more mature civilians, shared in the upsurge of morale which took place in May.<sup>4</sup> Stand-by had, after the months of waiting, been succeeded by new stand-to. The scattered light raiding up and down the country caused, as already noticed, a considerable increase of yellow and red warnings. If this warming-up process was still gradual and localised, it was nevertheless progressive. Cambridge Region reported early in June that recent events had 'gingered up' local authorities and the services, whose response to

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<sup>1</sup> H. of C. Deb., Vol. 361, Cols. 777-8, 4th June 1940.

<sup>2</sup> Chapter XII.

<sup>3</sup> H. of C. Deb., Vol. 362, Cols. 987-90, 4th July 1940.

<sup>4</sup> P. 355.

all over the country on London, and instructed them on 11th September to fire every available round. This 'barrage' (which was not properly speaking a barrage) forced the enemy to fly higher, turned him away from entering the inner artillery zone and 'bucked people up tremendously'.

It was, he also records, due to 'the stubborn courage' first of the East Enders and later of all classes and areas in London, that the enemy's largely inaccurate bombing failed to cause any serious loss of morale. Seen from another angle, namely that of a leading civil defence officer in the East End, what ensued were 'eight long agonising weeks. The atmosphere (he later recorded) grew tense with suffering and struggle... an immense weariness at the relentless regularity of the attack found its match in a dogged determination to go on, no matter what the cost'.<sup>1</sup>

On 17th September Mr Churchill told the House of Commons that the A.R.P. organisation in all its branches had proved its efficiency, and added, 'our whole system of life and labour is being rapidly adapted to conditions hitherto unknown to modern society'. In secret session on the same day he proposed to the House three measures of adaptation of its own proceedings and business. Namely, a ban in future on the publication of dates and hours of sittings, the advance in time of sittings to the morning and early afternoon and a reduction for the time being in the normal number of sittings. He suggested that Members not otherwise occupied in national service might at this stage do invaluable work in their own constituencies, especially those which had been 'knocked about by the enemy's fire'.<sup>2</sup>

During this week of 11th-18th September the enemy maintained a scale of attack of about 150 aircraft each night, and a number of incidents of an outstanding character took place. In daylight on 11th September an incident occurred which provided an exception, among others, to the general picture of continuous night-raiding. About midday a single German plane dived out of the clouds in what appeared to be a deliberate attack on Buckingham Palace, to which the King and Queen had just returned from Windsor. It dropped six bombs, two in the forecourt, two in the quadrangle, one which wrecked the chapel and one in the garden.<sup>3</sup> In the course of the next few days, and on separate occasions, incendiaries and delayed-action bombs were dropped on the Palace and in its grounds and its vicinity.

The damage in this week to civilian property (as distinct from military establishments, factories and communications) in London

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<sup>1</sup> R. Bell, *The Bull's Eye* (1943).

<sup>2</sup> Charles Eade (Ed.), *op. cit.*, Vol. I, pp. 260-264.

<sup>3</sup> See W. S. Churchill, *op. cit.*, Vol. II, p. 334.

and elsewhere was in the aggregate considerable, though the Ministry stated that in London Region some of this damage had been 'less hard to bear' in that it had been caused by crashing enemy aircraft. The problem of UXBs—which might or might not be delayed-action or time-fuse bombs—already becoming familiar in the attacks of the previous phase, could now be described as acute.<sup>1</sup> Besides seriously dislocating rail, road and other communications, these made necessary the evacuation for longer or shorter periods of considerable numbers of citizens from their homes. A notable example of this menace was a bomb of 1,000 kg. (about a ton) which was dropped near St. Paul's Cathedral and failed to explode, threatening not only the Cathedral but all the trunk telephone communications with the north country. The officer of the Bomb Disposal Squad of the Royal Engineers who removed this missile was one of the first recipients of the George Cross.

On 17th September the formidable 'parachute mine'—a naval mine with considerable blast effect and of a weight and explosive power never previously carried by aircraft—was dropped for the first time on London Region. Many others followed in the course of the ensuing weeks, and a large proportion of them failed to explode. The task of disposing of these fell on the Admiralty, or more particularly the Land Incidents Section of the Directorate of Torpedoes and Mining. The naval parties who composed this section dealt with large numbers of these mines in London and elsewhere with great courage and efficiency, sustaining a number of casualties in the process. Their work obtained little public notice owing to the paramount need to conceal from the enemy what we knew about the weapons he was using, and the methods by which we were dealing with them.

On a single night in September (18th-19th) the enemy aimed 350 tons of bombs at London—or more than the total weight of bombs dropped on the whole of Britain during the First World War.<sup>2</sup> By the end of this month he had dropped over 10,000 H.E.s and an immense number of I.B.s on London Region. The figures of killed and seriously injured for the whole country had, however, declined from about 6,000 in the week after 7th September to under 5,000 in the next week, about 4,000 in the third week and under 3,000 in the last week of this period. About four-fifths of these 18,000 or so serious casualties had occurred in London. The damage to war production and vulnerable points of different kinds, though not negligible, had been less than was officially expected. But the destruction of civilian property, especially the small houses of the poorer sections of the

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<sup>1</sup> pp. 360, 385.

<sup>2</sup> p. 11. According to German records the enemy aimed over 250 tons at London on nine other nights in September.

community, had been very great. The worst onslaughts had fallen on Stepney, Poplar, Bermondsey, Southwark, Lambeth, Deptford, Shoreditch, Bethnal Green, Holloway and the ancient City. But heavy damage had also been inflicted on homes and property of many other kinds in Central London and the West End.

On 23rd September King George VI broadcast to his people from Buckingham Palace, 'with its honourable scars', while an evening air raid was in progress. He recalled that with the Queen he had already seen many of the places in the capital which had been most heavily bombed and many of the people who had suffered most. He extended 'a special word of gratitude' to the men and women of the A.R.P. services. And he announced his decision to recognise the deeds of gallantry being performed by creating 'a new mark of honour for men and women in all walks of civilian life'. This would consist of the George Cross, to rank next to the Victoria Cross, and the George Medal for wider distribution.<sup>1</sup>

These few weeks of heavy attack had already formed a pattern in some respects decidedly different from the hypothesis or general picture formulated in advance by the defenders. The most definite difference between the actuality and the anticipation was the enemy's strategy, following his defeat in the Battle of Britain, of continuous night-raiding. Both factors of this equation—that of time, or the continuity of raiding which began about dusk and persisted until dawn, and that of darkness—had many consequences for the passive defences. While it was true that the raiding during the months of May to July had been chiefly by night this, by any standard of measurement, had been light.<sup>2</sup> All-night attacks which were also heavy presented many new problems.

A summary account must probably rate the most serious problem for passive defence as that of shelters and sheltering. The raids produced an immediate desire on the part of a not insignificant section of the London public to go underground to shelter. Many, of course, did this in their own homes, restaurants, hotels or other places where they happened to be; and a volume or more could doubtless be compiled on the habits, psychology and experiences of Londoners of all classes and geographical sections who sheltered in one form or another under these first attacks. What more concerns this narrative is the use that was made of the shelters of various types that had been provided for the public by the Government, and the local authorities.<sup>3</sup> It seems that the public, especially those in the East End who bore the brunt of the earlier attacks and whose homes were often of flimsy construction, quickly sought the various types of

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<sup>1</sup> *The Times*, 24th September 1940.

<sup>2</sup> pp. 358–360.

<sup>3</sup> pp. 366–372.

shelter which were officially provided, with a preference for any that were underground and public as distinct from domestic.

Though the story of this topic will be told in a later chapter, a few salient facts need mention here.<sup>1</sup> In certain areas the public (as they had done in the First World War) flocked into London's Tube stations, disregarding the Government's announcements that these should not be relied upon as shelters.<sup>2</sup> In the Tubes and in other large underground shelters they at once developed the habit of spending the whole night, thus creating the problem, to be later fully discussed, of the use of air raid shelters as dormitories. By the middle of September the practice of sleeping in London shelters had become widespread. The first census of London's shelterers was not taken until early in November, or almost at the end of the phase now under consideration, and this cannot, for reasons to be later suggested, be regarded as very accurate. It concluded, however, that 9 per cent. of the estimated population spent the night in public shelters, 4 per cent. in the Tubes and 27 per cent. in household shelters; or a total of 40 per cent. It is probable that during September and October these figures were appreciably higher, since experience proved that as the public became used to raiding the number of shelterers steadily declined.

Heavy all-night attack created obvious extra hardships for all sections of the community, including the added fears of not (except on rare occasions) being able to see the attackers, the added difficulties of extricating oneself from a building or taking other steps which might be necessary, and persistent loss of sleep. For the A.R.P. services the extent to which operations would have to be carried on in darkness had not, in training exercises and otherwise, been fully foreseen. Some delay was therefore caused over rescue work, attributable in large part to the difficulty of arranging sufficient lighting. Hand torches or lamps proved generally inadequate, the use of flares was obviously injudicious and unpopular both with the rescue parties themselves and with the neighbouring public, tarpaulin screens were difficult to erect over debris, and the use of motor-cars with screened headlamps might produce congestion at the scene of the incident.

The second most significant unexpected feature of these attacks was the relatively small loss of life accompanied by the relatively high amount of damage to all types of building which they caused. The conception, crudely stated, had been that of a hail of high explosive bombs falling in the streets and other open places and killing or seriously wounding a considerable number of persons. The reality, on the basis of this short experience, was that large

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<sup>1</sup> Chapter XII below.

<sup>2</sup> It was reported that 177,000 people sheltered in the Tubes on 27th September 1940.

numbers of H.E.s and I.B.s caused relatively few casualties but widespread physical damage, which included the trapping of persons in partially destroyed buildings of all types. The expectation of the authorities on the outbreak of war that 3,000 persons might be killed and 12,000 wounded on a single night and that this rate of losses might continue almost indefinitely had thus, fortunately, not been fulfilled. And the hospital and mortuary arrangements for some 250,000 casualties as a first provision had so far proved excessive.

It followed from this that the calls on the Casualty Services proved much fewer and those on the Rescue Service much greater than had been expected. It was even estimated by the Ministry late in November that 40-50 per cent. of the London Stretcher Parties could be dispensed with without ill effect. Rescue operations, on the other hand, proved both difficult and prolonged. The available parties were almost continuously at work, and the margin of reserve was almost non-existent. The methods and technique of these operations could only be evolved by trial and error. Though the topic will be more fully considered below, difficulties, in addition to manpower shortage, which at once arose included the physical removal of the quantity of debris often involved, the obtaining of reliable information about persons trapped in particular buildings, and the unsuitability or shortage of some of the rescue equipment issued.<sup>1</sup>

A third principal unexpected feature, already briefly referred to, was the quantity of UXBs and UXPMs or enemy bombs and mines which, being fitted with delayed-action fuses, failed to explode when they fell.<sup>2</sup> The UXPMs, it has been noted, were dealt with by naval officers and ratings working under the direction of the Admiralty. The story of administrative preparation for UXBs before and during the twilight phase of the war is one into which it has not been possible fully to enter. The War Office had shown considerable reluctance to undertake permanent responsibility for this matter, and much discussion between this Department and the civil authorities had taken place. An attempt initiated by the Ministry of Home Security soon after the outbreak of war to organise the training of civilians under local authority auspices for bomb disposal had failed; and in February 1940 the War Office had finally accepted this responsibility.<sup>3</sup>

The UXBs dropped in such unexpected numbers formed at this stage, it is probably not too much to say, one of the largest threats to normal civil activities and war production. They immobilised important railway junctions and long stretches of line, blocked main

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<sup>1</sup> Chapter XIII below.

<sup>2</sup> pp. 385, 390. UXPMs=unexploded parachute mines.

<sup>3</sup> A.R.P. Dept. Circular 239, 10th September 1939; H.S.C. 88/40, 11th May 1940.

roads and approaches to airfields and vital factories, and made it necessary to evacuate many civilians from their homes. Mr Churchill has recorded the special organisation set up in September to deal with this menace, the flow of volunteers to join the Royal Engineers' Bomb Disposal Sections, and his opinion that the overworked epithet 'grim' should have been reserved for their dangerous occupation.<sup>1</sup> But although by the end of October some 7,000 persons were employed throughout the country in bomb disposal, the number of UXBs still to be dealt with remained then and for many weeks to come at about 3,000.

It appears, at least in retrospect to an historical student, that much of importance in civil defence took place in a sphere that (whatever the current official organisation) cannot be satisfactorily classified as either 'operational' or 'administrative' but partook in some measure of both. In this the UXBs posed various problems, first of which, probably, was the detection of the genuine article from the false one. Since the fall of a bomb was often indicated by no more than a hole in the ground, or the effect of an explosion was often hidden, reports of the presence of UXBs much exceeded their actual number; and much time and effort was expended in investigating these reports. In London Region late in September ten 'Bomb Reconnaissance Officers', not necessarily persons with technical knowledge, were appointed with the function of sifting these reports, making inspections and giving authoritative advice. This was the genesis of the special training, which naturally took time and will be more fully described later, of police, wardens and civilian volunteers of various kinds in the detection and reporting of unexploded bombs and shells.<sup>2</sup>

Another problem, related to this one, was that of establishing priorities for the removal of unexploded bombs, real or supposed. Ministers, for example those of Transport and Supply, naturally came into competition with one another in this matter, while the maps in Regional War Rooms and local control centres continued to show an accumulation of UXBs waiting to be removed. This problem was one in which use was made of the co-ordinating machinery of the Home Defence Executive.<sup>3</sup> Regional Commissioners, it was decided, should have overriding authority in settling priorities, and the Ministry of Home Security began the formulation of categories of 'relative urgency' for the removal of unexploded missiles.

The fourth major feature not fully foreseen was the direct consequence of the three just described, though perhaps more especially of the second. The heavy destruction of civilian property, the

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<sup>1</sup> W. S. Churchill, *op. cit.*, Vol. II, pp. 318–320.

<sup>2</sup> Chapter XIII below; H.S.C. 300/40, 20th December 1940.

<sup>3</sup> pp. 357–358, 363.

while there was still time. For 'the garrison' (as she calls the black-coated classes) there was plenty of everything—attention, drink, taxis, most of all space. Two years later, when the war had moved from the horizon to the map, this autumn of 1940 seemed 'more apocryphal than peace'.

This description may be taken, *mutatis mutandis*, for other cities at this stage of the war, or after these had received a certain share of attack and were living in expectation of more. Its psychological analysis—in particular the impression which the Battle of London had created of space—may be linked with the fact that the smaller the city or the target attacked by an equal number of enemy aircraft or weight of bombs the larger the damage, dislocation and moral disturbance which was liable to result. In this summary the reader should bear in mind that an attack by x aircraft on Birmingham or Bristol was not the same as one (say) on Southampton, Plymouth, Banbury, Hull or Swindon.

Birmingham received its heaviest raid so far on the night of 19th-20th November, when some 400 tons of high explosive and nearly 30,000 incendiary bombs were dropped on the city, affecting almost every part of its big area. Over 800 incidents including a large number of fires were caused, and the Rescue Services had to call for aid from outside. Some 450 persons were killed and 540 badly injured. But the story was repeated of much damage to houses, shops and so on but little to establishments, apart from the railways, engaged in direct war work. The enemy now began to attack provincial towns for two or more nights in succession. Thus Birmingham was raided again less severely on 20th-21st and, after a night's pause, once more heavily on 22nd-23rd.

Southampton suffered two sharp raids in these weeks followed by two successive attacks on the last night of the month and the first night of December.<sup>1</sup> Bristol had its heaviest attack so far, a conspicuous example of 'area bombing', on the night of 24th-25th November. About 130 enemy bombers succeeded in killing 196 people and badly injuring a further 140 or so. They created many fires, the extinguishing of which was much hindered by water failures, and did much damage to the principal shopping centres. Before the end of the year this city suffered two more heavy attacks. In one of these the Regional Headquarters received a direct hit, though there were no casualties and work continued in the underground war room.

On 8th-9th December the *Luftwaffe*, possibly as a reprisal for an R.A.F. attack on Dusseldorf, inflicted London with its longest and heaviest raid for two months. Some 400 enemy bombers maintained the attack from early evening until seven o'clock the next morning. They killed some 250 persons and badly wounded over

<sup>1</sup> See Bernard Knowles, *Southampton: The English Gateway* (1951).

630, and started over 1,700 fires, including many in the docks. Buildings hit included Westminster Abbey and the House of Commons (though not severely), the Royal Mint, the Royal Naval College and once again a number of hospitals. One bomb fell on Broadcasting House while the nine o'clock news was being read. Though this did severe damage, necessitating evacuation of all except the A.R.P. parties, the broadcasting service was maintained.

The enemy turned back to the provinces, paying serious attention before Christmas to Merseyside again, Manchester, Birmingham, Sheffield, Portsmouth and Gosport, Leicester and other places. Sheffield received its first, and as it proved heavy, taste of attack on 12th-13th December, followed by a second attack three nights later. Though its commercial centre was severely damaged, particularly by fire, most of the industrial damage was superficial. Some 589 citizens were killed and 488 seriously injured in these two raids. Manchester, which compared with Liverpool had so far escaped lightly, was heavily attacked on the nights of 22nd-23rd and 23rd-24th. Much damage was caused by fires, especially in the industrial Trafford Park area, both main railway stations and the chief bus depot were hit, and some 376 persons killed and a rather larger number badly injured.

Probably on account of the weather, the Germans refrained from attack on Christmas Day and for two or three days thereafter. It is of practical significance to add that during the raids of November and December just summarised they had deliberately chosen Sunday nights, when the civil defence services and the public might be expected to be less on the alert, for their heaviest fire attacks on successive cities.

On the night of 27th-28th they resumed raiding in earnest with London as the main target. After attack on the next night on Plymouth and on the following night on Crewe, they returned on 29th-30th to make (as it proved) one of the most spectacular raids of the war on London. It was this attack which 'fired', on a much larger scale than in the reign of King Charles II, the City of London. Six conflagrations enveloped most of this square-mile. At the height of the attack the river Thames was dead low, so that fire-boats could not be fully used and many fires had to be abandoned. The Guildhall was destroyed, and eight Wren Churches burnt out. Guy's Hospital had to be evacuated and eight other hospitals were damaged. The Central Telegraph Office was demolished and three City telephone exchanges in the modern Wood Street building had to be abandoned.<sup>1</sup> Railway traffic was disorganised by the closing of five termini and

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<sup>1</sup> This building, which was burnt out, also contained the Headquarters P.A.B.X. and hundreds of repeaters for circuits passing through to Faraday Building. This night's attack inflicted the worst blow of the war on G.P.O. telecommunications plant.

services, and assisted greatly in establishing post-raid services, for which the provision made beforehand proved quite inadequate.

Bad or indifferent weather over the enemy's bases caused a marked decline in the weight of attack during the latter part of March and the first week of April. Attacks on shipping and mine-laying, especially from Norwegian bases, nevertheless continued unabated. And in these two weeks or so the towns attacked, with some loss of life and damage, included Shanklin, Ipswich, Gloucester, Hull, Yeovil, Bristol, Hythe, Poole, Folkestone, Norwich and Eastbourne. Small numbers of bombs were dropped ineffectively in many other places, ranging from the southern counties and South Wales to Fair Isle north of the Orkneys.

On the night of 7th-8th April heavier attack was resumed with some 370 German bombers ranging over every Region. These paid special attention to Clydeside, where about 50 planes were reported over the districts which had suffered so severely in the previous month, Tyneside and Tees-side, where they achieved little, and Yarmouth, where 20 persons were killed and substantial civil damage was inflicted. This night was also notable for the first raid in any strength on Belfast, where some 100 casualties were caused but the damage, except to one shipbuilding yard, was not heavy. The next night some 250 bombers made the biggest attack on Coventry which this city had experienced since the memorable night of 14th-15th November, and two nights later a smaller force came back to Coventry.<sup>1</sup> Casualties in these two raids were some 475 killed and over 700 seriously injured, besides those—who have had to be statistically disregarded throughout this summary—who were injured in a degree which did not necessitate admission to a hospital. Several aircraft and other important works were damaged, the central police station suffered casualties and damage by fire, the Warwickshire Hospital, King Henry VIII's school and St. Mary's Hall were damaged by fire, and some 50 water mains and many gas mains were cut.

The inhabitants of Coventry and of the many other provincial centres mentioned in this summary may perhaps have pondered in April 1941 on the admonition of Holy Writ that 'here we have no continuing city'. They were naturally unaware of the rather more optimistic view being taken at this date at the centre about the enemy's air offensive against Britain. Widespread raiding suggested an attempt to avoid the casualties lately inflicted by Britain's active defences during concentrated attacks. Attempts to dislocate production by keeping large areas in the north under warning and dropping bombs at many places seemed, at least temporarily, to be the *Luftwaffe's* strategy. In spite of the enemy's improved

<sup>1</sup> pp. 404-405.

navigation and accuracy of aim, military damage had not been extensive. And scattered raiding had only 'dented' local morale, in the sense of arousing anger but not despair, and had given the stricken cities opportunity to recover.

1941

During the week of 16th-23rd April the enemy, while continuing to hammer at the western ports, notably Portsmouth, made two more severe assaults on London. These diversions from the main strategy may have been due to recent heavier R.A.F. raids on Berlin. On the night of 16th-17th some 450 aircraft made the heaviest raid so far on the capital, dropping 446 tons of high explosive and 150 tons of incendiaries and causing more casualties—about 1,180 killed and 2,230 badly injured—than in any previous attack.<sup>1</sup> Over 2,250 fires were started; and the centre and south of the metropolis bore the brunt of the attack. Civil buildings, transport and communications were badly damaged. At one stage all Southern Railway termini were closed, several stretches of underground railway were suspended and road services were much disorganised. Though water and electricity supplies were fairly well maintained, gas supplies were severely interrupted.

More than 60 public buildings, including the Houses of Parliament, the Admiralty and the Law Courts, were in some degree damaged. At least 6 churches were destroyed and a further 13 damaged; and 18 hospitals were affected. Among the churches concerned was St. Paul's Cathedral which suffered a direct hit, causing (as it proved) the worst damage inflicted on the Cathedral in the war. In *Saint Paul's Cathedral in Wartime* the reader can find a graphic account of the activities of the Cathedral's Watch both in preparation and under attack.<sup>2</sup> On this particular night a fierce, concentrated, attack appeared to be deliberately made on the Cathedral. A heavy high explosive bomb fell through the North Transept causing much destruction, though 'the Dome almost miraculously remained unmoved and intact'. The whole east end was threatened by a parachute mine, which was ultimately rendered harmless by a naval party.

Three nights later the enemy again attacked London, concentrating this time on the East End and the docks. Casualties were again heavy—over 1,200 killed and 1,000 seriously wounded. Parachute mines and incendiaries caused considerable damage to sheds, warehouses, silos, timber yards, barges, trucks and offices. The Royal Naval College, Greenwich, St. Peter's Hospital, Stepney

<sup>1</sup> German records show the much higher figures of 685 aircraft, 890 tons of H.E. and 4,200 incendiary canisters dropped. This attack proved the worst on London of the war in terms of weight of bombs dropped, casualties inflicted and the number of fires caused.

<sup>2</sup> W. R. Matthews (1946). During the First World War a volunteer watch had also kept guard in the Cathedral every night.

underlay this decision. The public, however, were asked to keep their masks easily accessible in their homes, and local authorities were told that the Government wished to emphasise 'with all the force at their command' that they did not consider that the danger of gas attack was in any way past.

In an administrative sense, anti-gas measures continued to occupy a good deal of attention. In March 1944, when the possibility of the enemy's use of gas to repel Allied invasion had to be envisaged, the Ministry sent secret instructions to Regions regarding the announcements and instructions to be issued in this event to the public.<sup>1</sup>

The scale of attacks, as previously mentioned, declined steadily during 1943. Shortage of crews and aircraft impelled the enemy to a policy of an increasing conservation of his resources. In March Hitler appointed an *Angriffsfuehrer England* to co-ordinate all technical resources and equipment available for the air attack on Britain.<sup>2</sup> It is not irrelevant to mention here the plan of Marshal Goering of some months earlier, frustrated by Admiral Doenitz, to bomb New York and the Panama Canal; and that air raid warnings were sounded on the Pacific Coast of the United States during 1942.

A measure of the growing ineffectiveness of the enemy's attack was provided by the increasing discrepancy between his propaganda broadcast claims and the reality. In some 354 such claims made early in this year the enemy only possessed the confidence to name towns in 40 per cent. of the cases, and of these only 43 per cent. were correct. The enemy bomb load delivered on Britain declined from some 790 tons in the first quarter of the year to about 420 in the last quarter. Some 2,230 tons of H.E. were dropped on this country in 1943, as compared with some 3,030 tons in 1942.

There was, nevertheless, hardly one period of 24 hours throughout this year without at least one air raid incident. A few concentrated attacks on cities were included. For example, over 100 long-range bombers attacked London on 17th-18th January, paying chief attention to its southern suburbs and dropping a total of about 47 tons of bombs.<sup>3</sup> Two days later a proportion of fighter-bombers which flew in over the coast at 'zero-level' attacked the same general area. The brunt was on this occasion borne by Bermondsey, Deptford and Lewisham, where a 500 kg. bomb penetrated a school and killed many children. In these two attacks 107 citizens were killed and 158 badly injured. Though 8 key points and 5 railway systems were affected, the only substantial damage was to the Surrey Commercial Docks.

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<sup>1</sup> H.S.R. 43/44, 22nd March 1944.

<sup>2</sup> Colonel Peltz, an ace bomber pilot of 29 in whom Goering had much faith.

<sup>3</sup> German records, possibly through some confusion with the propaganda claims, show a total of 128 tons of bombs.

Cardiff sustained a night attack of some weight on 17th-18th May, when numerous flares were used to light up the railways and docks. Forty-three persons were killed and rather more seriously hurt and considerable damage was done to the main railway station. Soon afterwards Sunderland was the object of two moderately heavy night attacks. In these over 150 persons were killed and over 200 badly injured, a number of residential areas damaged and key points, railways and shipping were affected.

These occasions apart, the attack was predominantly of the tip and run or—as it was sometimes called—‘the scalded cat’ variety. The worst single incident of the year took place on 3rd March at Bethnal Green Tube shelter when, ironically enough, no attack was in progress on this particular area. A night attack of moderate proportions was being made on London, and warnings had sounded. A woman among the crowd entering this shelter, encumbered by a baby and a bundle, fell, causing those pressing behind her to tumble in a heap and the death by suffocation of no less than 178 persons.<sup>1</sup> Measured by the suffering on even one day in one enemy concentration camp this tragedy, which aroused deep concern in Britain, could appear small. But by less quantitative standards it may appear to future historians—irrespective of any mistakes made by the various authorities concerned—as a conspicuous example of the horror and futility of war.

The incidents caused by tip-and-run attack declined progressively from 80 in January of this year to 52 in March, 39 in June and somewhat fewer in the autumn months. In December there were only 7. On a geographical computation throughout the year Sussex suffered most severely, closely followed by Kent; and Devon, Hampshire, the Isle of Wight, Dorset and Cornwall were the other counties most concerned. Any list of the towns on which loss of life and damage was inflicted must include Dover, Ashford, Bournemouth, Eastbourne, Hastings, Brighton, Plymouth, Hull, Grimsby and Great Yarmouth.

A conspicuous feature of an attack on the night of 13th-14th June by long-range bombers on Grimsby and Cleethorpes was the number of small anti-personnel bombs (often known as ‘butterfly bombs’) which caused many of the 163 serious casualties in these two towns. Bombs of this character had first been used by the enemy in October 1940 and (though relatively rare) had given the British defences a good deal of concern. Instructions regarding their treatment had been at once issued to Regional authorities, the police and wardens, and the public had been strongly warned in the Press and by the B.B.C. not to handle them. On the occasions when these missiles were dropped police and members of the civil defence services were

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<sup>1</sup> See pp. 544-545.

## CHAPTER XII

### SHELTERS

**E**ARLIER chapters have shown that, because of an exceptionally late start, the shelter problem at the outbreak of war still assumed large proportions; but that all concerned then made good use of a further eight months' respite despite the new difficulties caused by scarcity of materials. When attacks began in earnest a Home Security official was able justly to claim that the country possessed 'a very respectable amount of shelter'.

In more statistical terms, some 17,500,000 persons (it was estimated) of the 27,500,000 or so in the 'specified areas' had been provided at the public expense with domestic and public shelter. Shelters were available in factories and offices in these areas for another 5,000,000; and a small number of householders had provided them on their own account. Over 2,300,000 'Andersons' had been distributed. Citizens not eligible for these could resort to strengthened basements, trenches, some specially built surface structures or any accessible modern buildings. Though there was not enough shelter for everyone, there was more than enough for those wishing to shelter in what, when the programme had been framed, were thought to be the threatened areas.

The transformation of the war in April–May 1940 had, however, exposed to attack the remaining one-third or so of the population which, at this date, had few domestic or public shelters. It must, nevertheless, be recalled that a large part of this minority lived in rural areas or in residential towns not regarded as very likely targets. Agitation had, however, at once arisen in such places for inclusion in the Government's various shelter schemes, and some progress had been made in doing this<sup>1</sup>.

#### Some Effects of Attack

Previous chapters have shown how far in the earlier years of war the tonnage of bombs dropped by the enemy fell short of what had been expected. But appreciation of the test, in a structural sense, to which shelters were put also requires some attention to the weight of the individual bombs employed. In designing shelters, the 500 lb (250 kg) medium case bomb had been adopted as the standard; though it had been recognised that the enemy might use a proportion of heavier bombs.

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<sup>1</sup> See pp. 367–372.

During the attacks of September 1940—May 1941 the large majority of high explosive bombs dropped by the Germans were, in fact, of 50 kg or 250 kg weight. The Research and Experiments Department estimated that the number of heavier bombs and mines was only about 1 per cent. of the total up to the end of 1940, and only 5 per cent. from then until August 1941. These proportions included, however, a few 1,000—2,500 kg bombs, and nearly 4,000 parachute mines of 500 kg or 1,000 kg (an unexpected weapon). In later attacks, for example the ‘tip and run’ and ‘Baedeker’ raids, the total weight of attack much declined but the proportion of heavier bombs steadily rose. In 1942, these represented about one-third of the total; in 1943 over 12 per cent.; and in 1944 (excluding ‘V-weapons’) nearly 20 per cent. In the ‘Little Blitz’ of this year the proportions of exceptionally heavy missiles—the 1,400 kg (‘Fritz’) the 1,800 kg (‘Satan’) and the 2,500 kg (‘Max’)—were much higher than formerly.<sup>1</sup>

The early scattered raids showed that ‘Andersons’ were most effective, and this was fully confirmed by the later raids on London and the provinces. The tensile character of their structure allowed it to spring back to its original shape after being distorted, and the covering of earth prevented damage from splinters. ‘Andersons’ properly sited and covered were usually undamaged by 50 kg bombs falling 6 ft. away or 250 kg bombs falling 20 ft. away, and their occupants suffered no more than shock. Occasionally, they resisted bombs falling even nearer. But those which were insufficiently covered or had fronts or backs unprotected were sometimes severely damaged even by bomb splinters.<sup>2</sup>

Brick and concrete surface shelters had proved, on the whole, less successful. Experience showed that the effects of blast and of bombs exploding underneath these structures had been over-estimated. But they proved liable to penetration or distortion by groups of splinters and they could be seriously damaged by earth shock caused by the movement of earth displaced by bombs. Many stood up remarkably well, even to these forces. But there were instances of surface shelters collapsing which, in some places, produced a whispering campaign about their safety.

Most of the faulty shelters were those built after the outbreak of war with mortar containing much lime or even, as a result of the ambiguous instructions issued in April 1940, of lime and sand only.<sup>3</sup> Other inferior materials and faulty workmanship were responsible

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<sup>1</sup> These were German sobriquets. The ‘Satan’ was nearly 9 ft high without the tail.

<sup>2</sup> The Research and Experiments Department prepared three early appreciations of the results of air raids—on 11th July 1940 (based on the experience of minor raids on coastal towns); 26th September 1940 (after raids on London and provincial cities); 23rd January 1941 (after four months of intensive raiding).

<sup>3</sup> p. 369.

for some catastrophes. Yet there was also a defect in the design of the surface shelter. The roof slab was not fixed firmly to the walls and was likely to be raised and to crash down again on to the shelter if the walls were shifted by surface earth-movement. This was serious, since after the spring of 1940, when steel shortage became acute, local authorities had relied to an increasing extent on surface shelters, which represented a big proportion of the total shelter in many places.

The performance of trenches varied much, according to the method of construction. Some lined with wood or even with concrete slabs proved very vulnerable, as the roof was easily lifted and the sides pushed in. But many of reinforced concrete resisted bombs falling only 8 ft away. Small strutted basements held debris loads very successfully. In fact, experience showed that strutting was unnecessary in small houses, since the amount of debris produced if the house collapsed was not likely to cause fatal casualties in an unprotected basement. But the basements of large non-framed buildings, widely used for public shelters, were not very satisfactory since they offered large targets with the risk of heavy casualties. The R. and E. Department had been aware of these defects in trenches and strutted basements in the spring of 1940; but that was an unpropitious time for introducing modified designs. Buildings with steel frames stood up excellently to the effects of bombing and gave good shelter not only in their basements but in higher floors as well.

The London public, in spite of instructions to the contrary, had as in the First World War flocked to the Tubes when raids began. Apart from a small number of incidents, these gave a very high degree of protection.<sup>1</sup> The combination of circumstances which could lead to a disaster, except in stations with less than 25 ft cover, was so improbable that there seemed to be no technical justification for prohibiting the public use of Tubes as shelters.

Though experience thus revealed weaknesses in construction of some shelters, on the whole they withstood the ordeal well and many gave better protection than was expected. The most serious challenge to shelters during the 1940-41 attacks came not from the weight of the attack but from its form. Shelter (like other) policy had been based on assumptions that raids would be spread fairly evenly over what were considered the vulnerable areas, would usually be made by day and would be short, with about seven minutes warning. When they came, the raids proved to be either short daylight attacks with little or no warning, or long attacks in hours of darkness.

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<sup>1</sup> *On the State of the Public Health during Six Years of War, Report of the Chief Medical Officer of the Ministry of Health 1939-45* (H.M.S.O. 1946) gives a list of Tube stations damaged by enemy action and the casualties caused in them during the whole of the war.

The effects of the long night raids were the most spectacular. In London especially some people quickly formed the habit of going to shelters at dusk and staying there until morning. Thus shelters designed to be occupied only for short periods became 'dormitories'.<sup>1</sup> The authorities had been so preoccupied with the primary task of making shelters safe that they had paid little attention to amenities. This tendency had been intensified by the fact that shelter responsibility had been borne in Regions mainly by technical staffs, and in local councils by borough engineers.

In the earliest phase the situation was made worse by the tendency of the public, notably in London, to congregate in certain shelters, usually the larger public ones, leaving others almost empty. Motives for this were various, and difficult to assess. Public shelters might be favoured because they were more comfortable to sleep in than 'Andersons' which were often damp, or surface shelters, which were very cramped if occupied for long. Often, people sought companionship. Underground shelters were generally the most popular, since shelterers felt safer and slept better when they could not hear bombs or gunfire.

Brick and concrete surface shelters were usually the least favoured, particularly the communal type introduced in March 1940. These lacked privacy and had none of the amenities of some of the larger public shelters. In spurning them the public were also influenced by the doubts already mentioned about their safety, fostered in some places by the leaders of the 'deep shelter' agitation.

Public preference did not always coincide with safety or with comfort. Some of the most popular London shelters were unhealthy railway arches, such as the Tilbury Arches in Stepney, that had been used as shelters in the First World War but gave little protection, and the basements of large badly constructed buildings. The Ministry discovered (more in sorrow than in anger) that the public showed 'a strong tendency to be irrational in their choice of shelters'. Many things at first combined to detract from the effectiveness of the available shelter and to jeopardise the principle of dispersal.<sup>2</sup>

Conditions in London's large public shelters in the early days of the blitz varied considerably. There is no doubt that in some, people spent nights of almost unbelievable squalor and discomfort. Few shelters had bunks, and the inmates tried to make themselves more comfortable and to stake a claim to the limited space by bringing bundles of bedding, sometimes hours before a raid was likely

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<sup>1</sup> pp. 512-522.

<sup>2</sup> A Research and Experiments Department memorandum, dated 23rd January 1941, went so far as to say that, as a result of all these factors, the number of casualties had not been reduced by more than 10 per cent. by the existence of shelters.

to begin, thus increasing congestion and creating serious hygienic problems. After the first raids many people bombed out of their homes began to settle down to a permanent life in shelters.

Lighting was rarely very bright and some shelters still had none. The majority had no heating and only inadequate ventilation; many were damp. Sanitary arrangements were hastily improvised and usually inadequate, since there were as yet no arrangements for disposing of sewage. There was rarely any provision for regular cleaning or for medical attention or inspection. Although behaviour in shelters was on the whole good, there were inevitably shelterers who were drunk, noisy, verminous or who otherwise interfered with the comfort, and particularly the sleep, of others.<sup>1</sup>

In other shelters, general conditions were much better. Some people had provided themselves with chairs, camp beds and even iron bedsteads, stoves or electric fires, candles or hurricane lamps and water. But these amenities inevitably reduced the available space. The more enterprising shelterers at once made arrangements for cleaning shelters and so on. In the London Tubes heat and light were already provided; but normal first aid equipment and sanitary arrangements were quite inadequate to meet the new demands, and there were no welfare arrangements and no food.<sup>2</sup>

It would, of course, be wrong to suggest that these conditions affected a majority of the population, even of London.<sup>3</sup> Many did not use any orthodox shelter but remained all night in their beds, or at least in their homes. It is impossible to calculate with any precision the numbers who used shelters, even in the larger towns. In London a periodical count was made of shelterers, usually once a month; but this took place on a single night which was not necessarily typical. In addition, the population was continually fluctuating owing to evacuation, the call-up to the Forces and war damage. The first shelter census in Metropolitan London, taken early in November 1940, showed that 9 per cent. of the estimated population spent the night in public shelters, 4 per cent. in the Tubes and 27 per cent. in household shelters—in all, only 40 per cent. in any kinds of official shelter. In September and October this proportion was probably a good deal higher. Later, as the London public became accustomed to raids, the figures dropped.

Liverpool was the only other city in which people slept in public shelters on a scale comparable to London. In Birmingham the practice was adopted early in the blitz, but a short respite from raids caused the numbers to fall; in Manchester the numbers were

<sup>1</sup> There were also reports of behaviour of this kind which turned out on investigation to be merely scandalmongering.

<sup>2</sup> Estimates of the peak number of shelterers in all London Tube stations (reached towards the end of September 1940) vary between 120,000 and 160,000.

<sup>3</sup> Shelter occupation is discussed in R. M. Titmuss, *op. cit.*, pp. 342 ff.

## Strengthening and Multiplying Shelters

While tackling these 'dormitory' problems, it was also necessary to deal with shelters which were proving structurally unsatisfactory, notably surface shelters built with inferior materials. The Ministry's instruction regarding these of July 1940<sup>1</sup> was followed in October by a prohibition of the inclusion of any lime in mortar used for surface shelters during the winter months. Some authorities who had experienced misfortune with these shelters had already stopped using mortar containing lime, but many had only been prevented from doing so by the continuing shortage of cement.<sup>2</sup> In April 1941, when the cement position had eased, prohibition of the use of mortar containing lime was indefinitely extended.

So far as surface shelters already built were concerned, the best course seemed to be to attempt to strengthen those that were moderately satisfactory and to close any that were obviously unsafe. In December 1940, authorities were given detailed instructions for strengthening or partially rebuilding shelters built with mortar containing lime, and were also told about methods of remedying dampness.<sup>3</sup>

In March 1941 the Ministry decided that all public and communal surface shelters built with mortar of lime and sand only should be closed or, if they were visibly unstable or the site or materials were needed for other purposes, demolished.<sup>4</sup> Shelters built with lime-cement mortar were to be examined, and if necessary also closed or demolished. These instructions did not apply to individual surface shelters which, being smaller, were stronger. The closing of shelters of these types roused strong public criticism.<sup>5</sup> Many local authorities were unable to offer alternative shelter near at hand; and some who protested it was unreasonable to condemn all lime-mortar shelters without distinction were later allowed to retain any which their engineer could certify as satisfactory.

The cost of strengthening or demolishing shelters was usually borne by public funds. The Government urged local councils to force contractors, if necessary by legal action, in cases where there was clear evidence of faulty workmanship or poor materials, to make good defects at their own expense. Some contractors did, in fact,

<sup>1</sup> p. 369.

<sup>2</sup> The provisional allocation of cement for shelter works for October was less than half the estimated minimum requirement.

<sup>3</sup> H.S.C. 290/40, 11th December 1940. In London Region it was reported that very few of these shelters were bad enough to be demolished, but repointing was necessary in most areas.

<sup>4</sup> H.S.R. 53/41, 5th March; L.R.C. No. 329, 11th March 1941.

<sup>5</sup> For example see H. of C. Deb., Vol. 370, Cols. 304-5, 20th March 1941.

rebuild the shelters, but many were able to use technicalities in their contracts to escape this obligation.<sup>1</sup>

Though the worst instances of these shelters collapsing were usually due to poor materials or workmanship, an effort was made to improve the design. In a new design prepared by the R. and E. Department in December 1940, the walls were constructed of ferro-concrete, brickwork or hollow concrete blocks reinforced with vertical steel rods, the vertical reinforcements being tied to the roof and, wherever possible, to the floor. This meant that if a bomb exploded near at hand the shelter could move bodily without breaking. In addition, a bituminous felt damp-proof course was provided at ground level to increase the shelter's resistance by allowing it to move slightly in a horizontal direction, and also to help to keep it dry; and the roof was designed to overhang the walls.

This improved design was used for all new public and communal shelters. New individual surface shelters were constructed in reinforced brickwork and provided with a bituminous damp-proof course.<sup>2</sup> Further research made it possible to apply many of the new design's merits to existing shelters by adding a new outer or inner 'skin' of reinforced brickwork or concrete keyed into the old brickwork. Public and communal shelters built with lime or lime-cement mortar were strengthened in this way first, especially those that had been closed because the mortar was unsatisfactory.<sup>3</sup>

Though the Government had intended that these improvements should be followed by a widespread publicity campaign, this was not thoroughly under way before the end of the Big Blitz. A new attempt was, however, made to encourage the public to use communal and domestic rather than public shelters.

Methods were devised of strengthening trenches with pre-cast concrete linings; but new trenches were lined whenever possible with 'in situ' ferro-concrete, which had proved very successful.<sup>4</sup> More sub-divisions were made in certain basement shelters where too many people were sheltering in each compartment, and emergency exits communicating with adjoining basements were often provided. The various types of strutting were improved; and because of the danger of bombs penetrating pavement lights many of these were cut off from basement shelters by a heavy vertical wall either flush with the building line or inside it. Local authorities already had power to close any unsatisfactory shelters they had provided, and in May 1941

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<sup>1</sup> H.S.R. 114/41, 19th May; H. of C. Deb., Vol. 370, Col. 171, 23rd April 1941.

<sup>2</sup> H.S.C. 290/40, 11th December 1940.

<sup>3</sup> H.S.R. 193/41, 29th July 1941. A number of brick surface shelters strengthened in various ways and a reinforced concrete shelter conforming to the latest design were tested with 250 kg. bombs at Richmond Park in June 1941. Further tests were made during the autumn and winter.

<sup>4</sup> p. 506.

Defence Regulation 23AA empowered them to prevent the public from using unsafe or unhygienic shelters in private premises.<sup>1</sup>

Surface shelters, trenches and strengthened basements had been provided extensively, on the Government's advice, for workers in factories, offices and shops. These shelters clearly ought to have been strengthened in the same way as those provided by local authorities. But because this would have meant further burdens on owners or employers who had already fulfilled their obligations under the Civil Defence Act, it was decided that, though these should be advised to improve their shelters, they should not be laid under a legal obligation to do so.<sup>2</sup> Many new industrial shelters provided at this time qualified for Exchequer grant.<sup>3</sup> No grant was paid towards capital expenditure on improving existing shelters; but the cost of some of the minor improvements recommended, for example measures to reduce dampness or replace defective mortar, was classed by the Inland Revenue as revenue expenditure and qualified for income tax allowance. In addition, considerable financial relief could usually be obtained for capital expenditure under the terms of the Finance Act, 1941.<sup>4</sup>

When providing extra shelters the logical course was to concentrate on types which were proving both structurally sound and popular.<sup>5</sup> Though the Government hoped it would eventually be possible to achieve more dispersal by encouraging people to use domestic shelters, the most vocal immediate demand was for more public shelters. Large steel-framed buildings, which were resisting the effects of bombs exceptionally well, were particularly suitable for this purpose, but these were used in the main for factory and office staffs. Though the owners of private buildings could be compelled to allow members of the public to shelter, this power had not at first been applied to industrial and commercial premises.<sup>6</sup> At the end of

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<sup>1</sup> H.S.R. 119/1941, 26th May.

<sup>2</sup> In July 1941 Factory Inspectors began to encourage factory occupiers to strengthen existing shelters wherever possible, particularly any constructed with mortar containing a high proportion of lime, and to use the revised designs for any new shelters. In November local authorities were asked to encourage the owners of commercial buildings to take similar action.

<sup>3</sup> See p. 533.

<sup>4</sup> 4 and 5 Geo. 6, Ch. 30, Section 19. This introduced a new income tax allowance for exceptional depreciation of buildings or plant provided after 1st January 1937 by a trader for the purposes of his trade. This allowance was also used to assist employers whose staffs had increased and who had provided extra shelter after fulfilling their obligations under the Civil Defence Act; and those who provided shelter voluntarily in newly specified areas in premises where less than fifty people were employed. These two complications had previously been the subject of long negotiations between the Ministry of Home Security, the Treasury and the Inland Revenue Department. Similar allowances were also available in respect of Excess Profits Tax and National Defence Contributions.

<sup>5</sup> For the control exercised by the Ministry of Works over the Government's building programme including shelter and other civil defence construction see C. M. Kohan, *Works and Buildings* (1952) in this series.

<sup>6</sup> A.R.P. Dept. Circular 216, 31st August 1939; Defence Regulation 23(1).

September 1940, however, local councils throughout the country had been given power to make industrial and commercial shelters available to the public as shelters outside business hours.<sup>1</sup> In practice, this source of shelter was to some extent limited by the need to ensure that normal work was not interrupted, for it was still assumed that 'safety first' for the individual was less important than the defeat of the enemy's attempt to dislocate the life of the country.<sup>2</sup>

Government departments were urged by local authorities and the public to make a similar contribution by admitting shelterers at night to their basements, though it was officially expected that this shelter would be needed to an increasing extent during the winter as sleeping accommodation for Government staffs. Also, strict precautions had to be observed when admitting people to some Government offices. Most of the shelters in Government buildings in Central London remained closed to the public, though some in branch offices in outer London and the provinces were used at night as public dormitories.

Though even the upper floors of steel-framed buildings gave good protection, the public almost always preferred underground shelters and much of the extra dormitory shelter took the form of basements. For example, by mid-October 340 extra basement shelters with accommodation for 65,000 people had been acquired in London. During the next months the number steadily increased, until by March 1941 most of the basements that remained could be opened to the public only by seriously interfering with the activities of the regular occupiers.

While responding to the demand for more public shelters, the Government gave fresh evidence of its steadfast belief in dispersal by arranging for the manufacture of a limited number of new 'Andersons' to be issued to certain authorities, who were this time responsible for delivery to those householders most in need of them. About 184,000 were produced in the last two months of 1940 and the first quarter of 1941, but it became necessary to abandon production after March because of acute steel shortage.<sup>3</sup> Extra curved sheets were distributed to extend the smallest 'Andersons', which had proved too small to sleep in. Some 123,000 pairs of these sheets were produced by the end of March, and a further 160,000 or so after the beginning of June.<sup>4</sup> All the new shelters were of the standard size, large enough for six people.

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<sup>1</sup> S.R. & O. 1940, No. 1750, 27th September 1940. Local authorities were at the same time empowered to ensure that the basements of tenement houses would be available for shelter to the tenants of upper floors.

<sup>2</sup> School shelters had been built with the aid of a grant of 50 per cent. from the Board of Education. But in January 1941 it was decided that the full cost should be reimbursed on condition that the shelters should, if required, be made available outside school hours to the general public.

<sup>3</sup> p. 334.

<sup>4</sup> H.S.R. 199/40, 30th October 1940.

Experience of raids also led to the introduction of an entirely new type of household shelter. 'Andersons', though structurally satisfactory, had not originally been intended for sleeping and became in many cases unfit for winter occupation. Domestic surface shelters were very cramped when used for sleeping and were in some places not popular, and strengthened domestic basements had been neither very successful nor widely used.<sup>1</sup> After night raiding had ceased to be a novelty, many people preferred to stay in their houses rather than to go out of doors even to their own domestic shelters. The 'Anderson', it will be recalled, had at first been envisaged as an indoor shelter.<sup>2</sup> Since many people were now determined to remain in their homes, it had become necessary to introduce some indoor shelter which might reduce the risk of injury from falling masonry and furniture. The fact that many who had hitherto sheltered under their staircases or furniture had been rescued unhurt from the wreckage of houses suggested that extra protection might be given by a light structure on the ground floor. To devise such a shelter was intrinsically simple; but the Research and Experiments Department, asked to tackle the problem very quickly, found it necessary, owing to shortage of materials and difficulties of mass-production, to make various designs.

By the end of 1940 two designs had been produced. The first, later known as the 'Morrison' shelter, had a rectangular steel framework 6 ft. 6 in. long, 4 ft. wide and about 2 ft. 9 in. high. The sides were filled in with wire mesh, the bottom consisted of a steel mattress and the top was made of steel plate an eighth of an inch thick, fastened to the framework by bolts strong enough to withstand a heavy swinging blow.<sup>3</sup> The shelter, which could be used as a table in the daytime, could accommodate two adults and either two young children or one older child, lying down.<sup>4</sup> Experiments showed that it would carry the debris produced by the collapse of two higher floors. But it gave no lateral protection and was intended to be placed on the ground floor, so that it would be shielded by the walls. Although this shelter gave less protection than a properly covered 'Anderson', it gave considerably more than the average house. A second design, with a curved top, was afterwards abandoned owing to manufacturing difficulties.

'Morrison's' were easily erected and were not, of course, subject

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<sup>1</sup> Materials for strengthening domestic basements ceased to be centrally supplied in January 1941, and local authorities then had to rely on the resources of local contractors.

<sup>2</sup> pp. 187 ff.

<sup>3</sup> The plates were thicker and more cumbersome than was necessary for protection, but they were conveniently available having been imported for another purpose.

<sup>4</sup> The original height of 4 ft. (which gave more headroom) had been reduced to make the shelter more suitable for its purpose.

to flooding.<sup>1</sup> They met the needs both of places subjected to all-night bombing and of those where occasional raids made reasonably good, accessible, shelter desirable. They had the advantage, to become of much significance later, of being easily moved. The Prime Minister showed great interest in these shelters the first of which, in fact, were erected in No. 10 Downing Street.<sup>2</sup> In January 1941 the Cabinet approved the manufacture of 400,000, providing protection for perhaps 1,200,000 people.<sup>3</sup>

An attempt was now made to help householders not eligible to receive free shelters. Shortage of labour and materials made it difficult for them to construct their own, and though they had been given the opportunity to buy 'Andersons', the response had not been good and these, in any case, were in short supply. When serious raids began, large numbers of people had been without domestic shelter. Yet the position was anomalous, since there was nothing to prevent them from using public shelters. It was now decided to raise the income limit of householders entitled to free shelters to £350. People still ineligible for these could either buy a 'Morrison' for £7 12s. 6d., or have one of the other standard types of individual shelter constructed for them by the local authority at cost price.<sup>4</sup>

The Government decided to concentrate supplies of 'Morrison's' in the most vulnerable areas, and first deliveries were made in London and a few other towns at the end of March.<sup>5</sup> The shelters, like the 'Andersons', were manufactured on Government contract, but authorities were responsible for storing the parts (which arrived from several different sources) and distributing them to householders.<sup>6</sup> In February contracts had been placed for 270,000 shelters, and another order for the same number was placed in April (thus exceeding the 400,000 originally approved). Two further orders for 270,000 were placed at the end of July and the end of September.

<sup>1</sup> Instructions were given in a pamphlet, *How to put up your Morrison shelter*, on sale to the public.

<sup>2</sup> One with a flat top and one with a curved top were erected in No. 10 Downing Street. The Prime Minister was at first inclined to favour the curved design but he afterwards recognised the advantages of the flat top, which would allow the shelter to be used as a table, and gave his approval to both designs.

<sup>3</sup> It was estimated that each 'Morrison' would use over 3 cwt. of steel, and that about 65,000 tons would be needed for the 400,000 shelters. This proved to be an underestimate since the table shelter, as finally designed, actually weighed 4.43 cwt.

<sup>4</sup> H.S.C. 87A/41, 10th April 1941. The price of the 'Morrison' was later reduced to £7, a refund being made to people who had paid the higher sum. There was no hire purchase system, as there had been for 'Andersons'.

<sup>5</sup> Under the new classification of areas, described on p. 534, those in the most vulnerable group were given first claim on the supply of 'Morrison's'.

<sup>6</sup> L.R.C. No. 320, 3rd March 1941; H.S.C. 64A/41, 8th March 1941. The railways at first allowed a reduction in standard rates for carriage, as they had done for 'Andersons'. But from October 1941 'Morrison's' became subject to a new flat rate introduced for the railway traffic of each Government Department, irrespective of the type of goods or the distance carried and including collection, delivery and incidental services. (S.R. & O. 1942, No. 151, 28th January 1942.)

When the first designs were being prepared, a two-tier model for the use of large families had been suggested and rejected. Though in April 1941 the Research and Experiments Department produced such a design it was feared that its introduction might dislocate arrangements for distributing the table shelter, and the decision to manufacture this model was not taken until the autumn.

Though distribution of 'Morrison's' started too late for much benefit to be derived from them during the Big Blitz, those which underwent this test emerged remarkably well. In April 1941 the Research and Experiments Department undertook to test indoor shelters of various designs being placed on the market by private firms; certificates were issued for those which reached the required standard and if a specimen had weaknesses the manufacturer was given advice about re-designing.

In June a revised version of *Your Home as an Air Raid Shelter* was issued with the title *Shelter at Home*.<sup>1</sup> This included information about three types of shelter which could be put inside refuge rooms—the 'Morrison', a commercially made steel shelter, and a timber-framed structure designed by the Ministry of Home Security. Some technical consultants were already offering reduced rates to householders for advice on preparing refuge rooms, and some local attempts were now made to compile lists of consultants willing to give free service to people unable to pay a fee.<sup>2</sup>

New types of protection had to be devised for workers in factories and offices who found it impracticable to use existing shelters during short and frequent daylight raids. In September 1940, leaflets were distributed containing a message from the Prime Minister asking employers and workers in essential industries to continue to work after the siren, and explaining that arrangements would be worked out between managements and workers for an industrial warning system within the framework of the public system and for special methods of protection to reduce the risk of casualties.<sup>3</sup> The length of the industrial warning by roof-spotters varied considerably, but not more than fifteen to twenty seconds could be guaranteed, which meant that workers could not reach shelters situated over about fifty feet away. In September, after inspecting factories in London, the Ministry gave advice on methods of improvising suitable protection in various types of buildings.<sup>4</sup> For example, floor area of workshops should be divided up as much as possible by dwarf walls, machinery, benches or stacks of products behind which workers could shelter when danger was imminent. If the roof was of light

<sup>1</sup> p. 371.

<sup>2</sup> H.S.C. 135/41, 12th June 1941.

<sup>3</sup> pp. 364, 422.

<sup>4</sup> Memorandum No. 16, *Emergency Protection in Factories* (H.M.S.O. 1940).

construction, some form of covering could be given at each workplace by use of existing fixtures or materials being manufactured. Advice about the protection of glass was included. The Inland Revenue agreed, after some hesitation, to regard the cost of most of these measures as revenue expenditure, while cases of especially elaborate measures would be considered on their merits.

Probably the most essential of these measures were those against flying glass from windows, skylights and glass partitions shattered by blast. On 16th November the Minister of Labour issued an Order compelling occupiers of factories employing more than 250 people to safeguard workers from this risk.<sup>1</sup> Scrim and similar netting, glass substitutes, bricks, timber and roofing materials suitable for this purpose could be obtained without much difficulty. But supplies of the most effective material—small-mesh wire netting—were limited. Firms were urged to deal immediately with all glass which could be removed or treated with other materials.<sup>2</sup> An arrangement was later made with the expanded metal industry for preference to be given to certain orders; supplies of wire netting were then reserved for vital factories and small-mesh expanded metal was officially recommended as a substitute in less vital factories and offices.<sup>3</sup>

## Deep Shelter Policy Revised

Most of these measures, taken as a result of battle experience, conformed with the dispersal principle. But the Government's decision, closely linked with this principle, not to provide 'bomb-proof' shelter was still often being challenged, and the deep shelters agitation naturally received stimulus from the attacks.<sup>4</sup> By the end of September 1940 its development was causing the Government real concern. Though entangled with politics, and especially with Communist Party activities, it was gaining support from the more moderate Press and from many inspired only by desire for the public safety. Despite publication of the Hailey Report there was still much confusion of thought about the Government's policy, sometimes misinterpreted as an objection in principle to safe shelter. Moreover, the public had removed one of the chief objections to deep shelters—the difficulty of quick access—by developing the habit of all-night sheltering. By October the whole question had to be urgently reviewed.

The Cabinet decided at the end of this month that though deep shelters could not be anywhere extensively provided, a new system

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<sup>1</sup> Factories (Glass Protection) Order, 1940, S.R. & O. No. 2013.

<sup>2</sup> Ministry of Labour and National Service Circular No. 845262, 21st November 1940.

<sup>3</sup> H.S.R. 23/41, 23rd January 1941.

<sup>4</sup> pp. 371-372.

the shelters; for example, parties of London shelterers visited the Zoo and went swimming in the Serpentine.

A large problem now arose of preventing unoccupied shelters from being misused, and complaints about damage and theft of fittings had become frequent by the autumn of 1941. In December some authorities locked shelters during the day and quiet periods, giving keys to the wardens' post or to the police so that shelters could be opened immediately the sirens sounded. They usually kept a few shelters open at night for those who wished to sleep there regularly, even when there was no alert.<sup>1</sup> One of the more successful devices for locking shelters was a strong inside bolt which could be reached from outside through a hole covered by a glass door secured by a padlock; wardens or police could open the shelter by unlocking the padlock and drawing the bolt, but in an emergency shelterers could break the glass door. Pilferers found it more difficult to remove such fixtures though there was, of course, nothing to prevent them from breaking the glass, and sometimes the doors themselves were smashed or entirely removed. It sometimes proved necessary to use a special device for locking up lamp bulbs in shelters.

The Press and various organisations co-operated with local officials in campaigns against these offences. Ministry of Health inspectors were very successful in some of the worst areas in encouraging women shelterers to undertake cleaning and looking after the shelters. Though by the end of 1942 this situation was improving, complaints were still frequent that the penalties imposed were inadequate and in January 1943 the Home Office asked magistrates to take a serious view of these offences. The possibility of making a special Defence Regulation was considered, but this could hardly be justified as offenders could be punished under the existing law for almost every kind of damage to shelters.

The fact that shelters had to be kept closed still caused uneasiness to Parliament and the public, and early in 1943 the Government reminded authorities of the importance of ensuring that people would have quick access to them in an emergency.<sup>2</sup> It was in this period that many householders began to use domestic shelters as stores for bicycles, garden tools and other belongings. Unless this was likely to cause deterioration or was undertaken for profit no attempt was made to prevent them. One A.R.P. Controller in Scotland, however, was officially asked to take 'all possible steps' to prevent a householder from using his shelter as a hen-house.

The numbers sleeping in London's Tubes also began to fall off soon after the Big Blitz ended. The L.P.T.B. suggested in July 1941 that some stations should be closed to shelterers, but the Government

<sup>1</sup> Ministry of Health P.R.O. Circular 63/41, 9th December 1941.

<sup>2</sup> Ministry of Health P.R.O. Circular 104/43, 19th February 1943.

would not accept this risk at that time. But twelve months later shelterers were temporarily excluded from thirty-nine stations and parts of two others where they caused most inconvenience to traffic. Stations within easy reach were kept open as shelters, and skeleton staffs were retained in those closed so that they could, if necessary, be opened during alerts. The closing of stations roused strong public criticism, and in June 1943 it was arranged that they should all be opened automatically in the event of an alert and should remain open for the next three nights, or if necessary longer. The next month, when alerts in London became more frequent, a number were permanently re-opened. In the autumn, however, bunks not needed for ticket-holders were removed from some stations where they were causing inconvenience.

In the spring of 1943 the Board urged the Government to take further steps, now that the enemy was using heavier bombs, to protect the Tubes from flooding from water-mains, sewers or the Thames. Watertight doors had been fitted at a number of stations before the blitz to safeguard them from the first two dangers. But a disaster at Balham Station in October 1940 when a number of shelterers were overwhelmed by liquid debris had shown that risk still remained. After technical experts had examined certain stations, the Ministry decided that the risk was not great enough to justify closing any of them to shelterers and a proposal to install floodgates in two of them was later abandoned.

Flooding from the Thames was a more serious danger. For though sections of the Tubes under the river could be cut off by floodgates from the rest of the system when the sirens sounded, this did not eliminate the risks of a bomb breaching an under-river Tube before floodgates were closed or of the floodgates being damaged. Nonetheless, the Government concluded that some of these risks would have to be accepted and rejected an elaborate L.P.T.B. scheme in 1943 for installing more floodgates and watertight doors in certain low-level passages at a cost of about £25,000. The Ministry was more concerned about the risks of five of its new Tube shelters being flooded, and special floodgates to protect these were installed at a cost of about £3,000.

About this time, when the public expected reprisals for heavier R.A.F. raids on Berlin, there was a serious disaster at a large shelter adapted from a Tube station under construction at Bethnal Green. On the night of 3rd March 1943, large numbers of people descending a dimly lit staircase into the shelter after the siren had sounded were subjected to sudden pressure from those behind them, alarmed by a salvo of anti-aircraft rockets. A woman who had nearly reached the bottom fell and blocked the stairway which, according to the magistrate who investigated the incident, was 'converted from a corridor

into a charnel house in from ten to fifteen seconds'.<sup>1</sup> The disaster again focused attention on the difficulty of controlling crowds at the entrances to large shelters, which had been one of the Government's strongest arguments against deep shelters. It was also a grim reminder of the conditions which could ensue if people lost self-control in an air raid, though in this instance no bombs had dropped. The entrance to Bethnal Green station was immediately altered and walls were erected around entrances to other Tube stations.

Many London authorities then examined entrances to large shelters, particularly those with descending stairways, and where possible installed crush barriers and sliding gates and saw that stairways were adequately lit and fitted with handrails.<sup>2</sup> The disaster made a deep impression on public opinion, and prompted a few local councils to produce ambitious schemes for strengthening shelters to eliminate the risk of injury and panic, most of which proved quite impracticable owing to scarcity of labour and materials.

In the spring of 1942, when the first of the new tunnel shelters under certain stations was nearly ready, the New Tube Shelter Committee had urged the Ministry to open the shelters, or parts of them, to give staffs and the public experience of using them.<sup>3</sup> This idea also appealed to the L.P.T.B. since it would enable shelterers to be transferred from other Tubes where they were causing some inconvenience. But as maintenance costs would be high and the new shelters were not really suitable for intermittent raids, the Government decided to keep them in reserve.

In August, when seven were almost complete and provided with bunks and amenities, the Ministry agreed that skeleton staffs should always be available in these so that Tube shelterers could be transferred to them if heavy raiding was resumed and the Tube system became seriously overcrowded.<sup>4</sup> But the shelter committee was still dissatisfied, since the decision to transfer shelterers was to be taken by the Regional Commissioner and not by the stationmaster or shelter superintendents, and there would be no arrangements for allocating places in the new shelters in advance. This controversy, which attracted much public attention, continued throughout 1942 and 1943, and on several occasions the New Tube Shelter Committee threatened to resign.

Meanwhile, the Government was discovering other uses for this underground accommodation. At the end of 1942 part of the Goodge St. shelter was made available for General Eisenhower's London headquarters, and later two others were adapted for use by the

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<sup>1</sup> See p. 438. This disaster caused the death by suffocation of 178 shelterers.

<sup>2</sup> H.S.C. 70/43, 19th April 1943.

<sup>3</sup> pp. 531-532, 540.

<sup>4</sup> At an eighth station, Belsize Park, tunnelling was completed but floors had not yet been erected in all sections and there were no bunks.

operational staffs of Government Departments. A section of one shelter was used each night as a hostel for American troops, and sections of the other four were used by British troops at week-ends. At the end of 1943 it was decided that all these new Tube shelters should be temporarily held in reserve to be available if needed as extra 'citadel' accommodation.

## Mobilising Reserves

The preparations starting in 1943 to meet the new challenge of V-weapon attacks are recorded later in this volume.<sup>1</sup> Notice of some of the efforts to provide suitable shelter in areas likely to be attacked by this method is nevertheless appropriate here. For these proved of much value during the 'Little Blitz' of early 1944 which, apart from being concentrated on London, was not essentially different from the earlier attacks.

It was assumed that to be effective in attacks by pilotless aircraft or long-range rockets, shelters would have to be easily accessible. Yet a review of London shelter in the summer of 1943 had shown that large numbers still had no domestic shelter, and that many thousands would be unable to reach a public shelter quickly. Though the obvious solution to the problem was the 'Morrison', production of these had stopped twelve months before; and in order to build up a reserve issue had been discontinued in various areas, including London. At the beginning of October it was decided that another 100,000 'Morrison's' should be manufactured and that the reserves held in Scotland, the North of England, the Midlands and North Wales should be moved to the vicinity of London and to the Reading and Tunbridge Wells Regions, from where they could, if necessary, be used to supply London.

Large-scale redistribution of 'Morrison's' and the procurement of new ones called for a substantial administrative effort. Nonetheless, most reserves were transferred during the autumn, and by the end of January 1944 some 12,000 had been distributed to London householders. At the beginning of this year, however, preparations for the Allied invasion of Europe began to choke the railways with more important traffic, and it became impossible to transport new shelters from manufacturers in the north of England. This difficulty, combined with delays in the production of spanners and nuts, meant that no new shelters could be delivered before late February or early March, when it was expected that the V-weapon attacks would have begun. Arrangements were made for some to be shipped coastwise to London; but in mid-February the contract for the remaining 'Morrison's' (about 20,000) was cancelled.

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<sup>1</sup> Chapter XV below.

# CHAPTER XV

## THE NEW CHALLENGE OF 'V' WEAPONS

(April 1943 – May 1945)

### Planning Against New Weapons

THE first serious intimation that the enemy was planning to use new long-range weapons against Great Britain came in April 1943. There had already been reports, the first as early as November 1939 and others during 1942, that the Germans were developing rockets for military purposes and that long-range rocket trials had taken place along the Baltic coast. Although much of the information was still nebulous and contradictory, by April 1943 military intelligence had enough evidence to justify informing the Chiefs of Staff of a threat which clearly had such extensive implications both for the defence of the country and for the security of the projected invasion of the Continent. The Chiefs of Staff Committee in turn agreed that the Prime Minister and the Minister of Home Security should be informed; they recommended an investigation to establish the facts, and if necessary to devise counter-measures. Mr Duncan Sandys, Joint Parliamentary Secretary to the Minister of Supply, was put in charge of this enquiry.

Throughout his investigation, which lasted from April to November 1943, Mr Sandys could call upon the intelligence machines of all three Services and the advice of many leading scientists and engineers. The work fell into two main parts: first, establishing the character of the threat; second, devising counter-measures. Although it might have been preferable to assess the danger before embarking on counter-plans, the time factor made it essential that the two activities should go on concurrently.

Mr Sandys submitted his first interim report to the Chiefs of Staff Committee on 17th May. He had not found the evidence conclusive, but it was sufficient for him to urge that an intensive effort should be made to obtain further information from agents on the Continent, from prisoners of war and by air reconnaissance. As well as this intelligence activity the Chiefs of Staff Committee agreed that experimental stations in Germany and suspicious works

in North-West France should be bombed, that methods of tracing projectiles and the possibility of diverting them should be studied, and that the Ministry of Home Security should consider what special civil defence measures would be needed should heavy attacks eventually materialise.

Two inter-departmental committees were now set up. The first was to consider technical measures such as radio location, a rocket watch system, the possibility of giving warning of the rockets' approach and methods of destroying them; it quickly recommended the provision of a small amount of special radio location equipment. The second committee, under the chairmanship of Sir Findlater Stewart and reporting to the Home Defence Executive, considered matters of more direct concern to this volume.<sup>1</sup> It was to advise on the possibility of deceiving or confusing the enemy on the effect of his fire, on policy regarding public warning, measures for security and censorship and the necessity for special passive defence arrangements.

The first report of Sir Findlater Stewart's Committee was made to the Chiefs of Staff on 27th June 1943. This reviewed all the major problems of civil defence including control of the press, announcements to the public, accommodation for the homeless, the evacuation of priority classes from London, the warning system, the provision of additional 'Morrisons' and the strengthening of surface shelters in London, and the re-organisation and re-deployment of the services to strengthen vulnerable areas. The Ministry of Home Security was asked to investigate these recommendations and to make detailed proposals for carrying them out.

But there was still very scanty knowledge as to the true nature of this new weapon and there were sharp divisions of opinion among Ministers and officials about the seriousness of the threat. There were those who believed that rocket attacks of the type suggested were either scientifically impossible or hopelessly impracticable. Lord Cherwell, for instance, believed that the long-range rocket story was a deliberate hoax, perhaps a hoax behind which the enemy wished to conceal some other project, such as the development of pilotless aircraft; he felt we should not confine our efforts and attention to the rocket, thus blinding ourselves to the possibility of other developments.<sup>2</sup> Mr Duncan Sandys on the other hand was convinced of the rocket danger. He had accumulated further evidence which, though not completely consistent, contained sufficient common basis to lead to the conclusion that the rocket existed. From a variety of sources an alarming picture of the weapon had been

<sup>1</sup> See pp. 357-358.

<sup>2</sup> It should be remembered that at this stage attention was focused almost entirely on long-range rockets, and that the use of pilotless aircraft, or flying bombs, had hardly been contemplated.

pieced together—it seemed that it might be about 38 feet long, 7 feet in diameter, and weigh up to 60 tons with an explosive charge of 5–10 tons; it was believed that the rocket's range was between 90 and 130 miles. From this data the Ministry of Home Security made tentative calculations on the effect of an attack on London by rockets with an explosive charge of 10 tons. A single rocket might damage property over an area of 650 acres, and cause complete or partial demolition over a radius of 850 feet and serious blast damage over a radius of 1,700 feet. Casualties from each rocket might amount to 600 killed, 1,200 seriously injured and 2,400 slightly injured; one rocket each hour for twenty-four hours might result in 10,000 killed and 20,000 seriously injured.

Although uncertainty persisted, the potentialities were sufficiently disturbing to call for immediate action. In July the Prime Minister recommended that it would be prudent to concentrate reserves of 'Morrison' shelters in London and to continue the strengthening of surface shelters; he did not, however, think the danger was sufficiently defined to justify allocating more steel for shelters. Although he believed that the peril might never materialise he favoured taking some additional civil defence measures, and planning a heavy counter-attack by air on the points of origin of these weapons. The Prime Minister did not, however, think that any serious diversion of effort should be made until there was more definite evidence that this danger was imminent.

By the end of August considerable progress had been made in civil defence preparations. A draft public announcement and censorship arrangements had been approved; a warning system had been devised; plans were complete to evacuate 100,000 of the priority classes from London at the rate of 10,000 a day and 20,000 from Gosport, Portsmouth and Southampton; reserves of 'Morrison' shelters were being concentrated in the London area and near Portsmouth and Southampton. The Home Secretary, however, was not satisfied that these measures were enough; he would be happier, he said, if he could have a further 100,000 'Morrison' shelters constructed and if he could press on more quickly with the reinforcement of surface shelters.

Meanwhile, in the field of active defence, attacks were made by the R.A.F. on suspected rocket production centres. The heaviest of these was on 17th August when nearly 600 aircraft dropped about 2,000 tons of bombs on the German experimental station at Peenemünde.

At first, the investigation into possible new weapons had been directed almost entirely to the rocket. During the summer of 1943, however, reports of 'an air mine with wings' and pilotless aircraft began to suggest that the enemy might be developing two long-range

weapons—a rocket and something akin to our own Queen Bee (a radio controlled light aircraft developed by the R.A.F.). By the end of August reliable reports had been received making it clear that some form of pilotless aircraft was just as real and immediate a threat as the rocket. In September the Chiefs of Staff Committee, at Mr Duncan Sandys' suggestion, agreed that his work should be confined to long-range rockets and other similar projectiles, while investigations into the development of jet-propelled or gliding bombs, pilotless aircraft and jet-propelled aircraft should be undertaken by the Air Ministry.

On 11th September the War Cabinet considered the need for a revival of the plan (known as the 'black move') to evacuate a proportion of the staffs of Government Departments from London.<sup>1</sup> The numbers now involved in such an exodus of the war-expanded Departments would be high, and difficulties of communications, transport, accommodation and billeting again seemed overwhelming; it was, therefore, agreed that the more practical course would be to devise measures such as 'citadel' accommodation to enable essential work to continue in London. The production of the further 100,000 'Morrison' shelters and the work on the reinforcement of street shelters proposed by the Home Secretary were also authorised.

On the reality and the dimensions of the danger of rocket attack there were still strong and conflicting views: Lord Cherwell and some other scientific advisers continued in their disbelief of the rocket menace, while in Mr Duncan Sandys' view there was a possibility of an attack on London with rockets equivalent to some 2,500 to 10,000 tons of bombs during any single week in November or December. The Defence Committee discussed the evidence on both sides very thoroughly on 25th October. It was agreed that the House of Commons should be told in secret session of the chain of events connected with the rocket threat and the steps which had been taken to deal with it; the Scientific Committee<sup>2</sup> that had been investigating the technical possibilities of rocket attack was to continue its studies; concentrated attacks were to be made on suspicious installations in Northern France; photographic reconnaissance was to be intensified; more consideration was to be given to the question of public announcements and warning arrangements.

By November there was fairly unanimous agreement that a rocket of the range and size suggested could be constructed though there was still division about the urgency and degree of the danger; the

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<sup>1</sup> See pp. 324–328, 362, 400.

<sup>2</sup> In view of Lord Cherwell's disbelief in the rocket a scientific panel had been set up to decide whether such a rocket was a possibility. The report of this panel was considered at the Defence Committee (Operations) meeting on 25th October 1943. It concluded that rockets of the type reported on were a practical proposition and set out the possible performances of these weapons.

most general view was that this project must involve such difficulties that a number of years might be involved in research and development. Nevertheless it was agreed that the planning of counter measures must proceed. On the question of the maintenance of the machinery of government it was agreed that deep Tube shelters should be used for extra 'citadel' accommodation. A new long-range rocket warning system had now been worked out and tested; a continuous watch for rockets was being maintained at eight selected Radar stations. The Home Secretary recommended to his Cabinet colleagues that further reductions in the strengths of the civil defence services should be postponed until the situation on rocket attack had become clearer, and it was agreed that, while the substantial cuts approved should stand, they should take place between 1st April and 30th September 1944 instead of in the first half of the year.<sup>1</sup>

The War Cabinet considered all these aspects of the problem in the middle of November. It concluded that no serious attack by rockets or pilotless aircraft was likely before the end of the year, questioned the desirability of giving the public a special warning after each rocket was launched, and ruled that while no public announcement should yet be made, certain officials might be warned in confidence of the future possibilities. By this time Ministers felt that the special enquiry stage had passed and the separation of research into rockets and pilotless aircraft was no longer tenable. It was agreed, therefore, that the Air Ministry should now take over the responsibility for all these investigations, now given the code name 'Crossbow'.

In the middle of December the Chiefs of Staff Committee reported that, disregarding the consequences of bombing counter-measures, they considered it possible for the enemy to launch a full-scale attack by pilotless aircraft in February 1944 or a smaller-scale attack during January. As far as rockets were concerned, they found little positive evidence of quantity production. By December therefore development of the 'flying bomb', despite its late start, had overtaken that of the rocket. For some time there had been confusion between the two weapons. During the last three months of 1943, however, evidence began to mount on the flying bomb and on the 'ski sites'<sup>2</sup> from which the Germans planned to launch it; the flying bomb had now replaced the rocket as the more immediate menace. A vigorous R.A.F. attack against the ski sites began on 5th December. Up to the end of 1943 'Crossbow' had been primarily an intelligence

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<sup>1</sup> See Chapter XIII, pp. 561-563.

<sup>2</sup> A number of these emplacements were discovered in Northern France from October 1943 onwards. They each had a concrete platform some 30 feet long and 12 feet wide with an axis aligned on London, with two rectangular buildings and one square one, and three buildings shaped like skis. In a fortnight of photographic reconnaissance 29 ski sites were identified, and agents reported 80 more.

problem; now that there had been positive identification of this weapon and the means of launching it, the main burden of the problem could be passed to the operational staffs.

On the civil defence side, the War Cabinet decided that the principal newspaper editors could be informed in confidence of the present position; that the Home Secretary might bring the civilian administration aspects of 'Crossbow' before the Civil Defence Committee; that additional plans to evacuate priority classes from Bristol, Cardiff, Dover and Plymouth should be prepared and that, in the allocation of accommodation in deep Tube shelters, priority must be given to the maintenance of the machinery of government. The Civil Defence Committee, on being consulted for the first time at the end of the year, advised against evacuation for possible targets other than London, Portsmouth and Southampton and was doubtful about the advantage of a special warning system.

Strongly conflicting opinions existed among Ministers on the probable scale of attack. Early in February 1944 the Chiefs of Staff gave a new estimate. They recommended that preparations should be based on the assumption that the attack by pilotless and other aircraft might amount to a first blow of between 550 and 625 tons of high explosives over a period of ten hours or, if the enemy was prepared to deplete his bomber resources before the Continental offensive, to between 700 and 900 tons; after this, sustained attacks might be expected of between 45 and 55 tons or 70 to 130 tons during each 24 hours. The worst of the expected attacks were, therefore, equivalent to about one and a half times the weight of the heaviest raids on Britain so far experienced. This estimate was at best an 'instructed guess'. The War Cabinet decided that while the attacks on the 'Crossbow' sites should be continued, the situation did not call at that stage for the expenditure of further money and resources on increasing our passive defence measures.

In the middle of March the Air Ministry again revised their estimated scale of attack in the light of the latest evidence on the enemy production of flying bombs, the number of launching sites and the effectiveness of our bombing counter-measures. Making no allowance for the success of our active defences, they now calculated that the tonnage falling on Greater London might be in the order of: (1) 5 'blitz' attacks in the first 15 days, each being equivalent to 160 tons of blast bombs over a period of 10-12 hours, at intervals of 48 hours; (2) subsequently, 5 attacks in the next 15 days, each equivalent to 80 tons of blast bombs over periods of 10-12 hours, at intervals of about 48 hours. As concentrated R.A.F. attacks could be directed against the small number of sites capable of operating, this scale of attack for the first 30 days could not, they thought, be sustained at anything like these rates. All this added up to a much more hopeful

picture than many previous prognostications. The maximum scale of attack should not now exceed something between one-third and one-half of the previous estimate; and if British bombing counter-measures continued with their present success even this scale would diminish after 1st April.

Meanwhile civil defence measures to protect and reassure the population in those areas likely to be attacked were being further discussed and amended. The desirability of a special air raid warning system for rocket attacks was a difficult question to decide. The Ministry of Home Security had devised a system for vulnerable areas by which warning would be given by the simultaneous firing of a number of maroons; the noise of these short sharp explosions would be accompanied by whistles and red flares shooting up to about 1,000 feet, the flares burning for about 8 seconds and being visible by day or night. This signal, based on radio detection from the firing points, would be given as far as possible for each missile and would give at the most about one minute's warning. There were, however, a number of arguments against such a system. The period of warning would be so short that casualties might be caused by a rush to shelter, production would be interfered with and the special warning might itself affect public morale more adversely than no warning. To begin with the Ministry of Home Security tended to the view that the advantages of this system outweighed the disadvantages; but later, when the flying bomb rather than the rocket had become the immediate menace, it concluded that a separate rocket warning system was inadvisable. As for flying bombs, their speed was not so much faster than that of aircraft; the normal warning system was therefore adequate.

As far as shelter policy was concerned, orders had been placed in September 1943 for an additional 100,000 indoor table shelters and existing stocks were moved into the areas of probable attack. Difficulties of manufacture and transport had led to poor deliveries of 'Morrisons', and it seemed unlikely that more than half of the additional shelters ordered would be available by the time attacks were likely to begin. As the remainder would probably arrive too late to be of any use, contracts for the shelters were to be reduced by about 25,000. On the question of deep Tube shelters it had been agreed earlier that priority in the allocation of space would have to be given to the essential machinery of government. The Ministry of Works worked out a plan to shelter those government staffs not already provided for in the strengthened basements of their own steel-framed buildings. All shelter plans, the reader will recall, were given valuable impetus by the resurgence of 'conventional' attack on London and the south in the 'Little Blitz' of early 1944.<sup>1</sup>

<sup>1</sup> See pp. 546-547.

On evacuation, a scheme known by the code name of 'Rivulet' was ready for the voluntary evacuation of school-children, mothers and young children and expectant mothers from London, Southampton, Portsmouth and Gosport in a minimum of ten days. This scheme could be operated whether the attack was due to 'Crossbow' weapons or to exceptionally heavy 'conventional' raiding.

In active counter-measures the early months of 1944 saw much progress. The heavy raid on Peenemünde of the previous August and subsequent attacks on other production centres and on the launching sites in France delayed the bombardment of London by many months. In March 1944 the Germans were forced to abandon most of the original launching sites rendered useless by Allied bombing and to start constructing alternative sites of simplified design. This breathing-space afforded by the counter-measures was of vital importance. The rockets, for instance, might well have begun to fall early in 1944 instead of in September, by which time the launching sites in Northern France had been over-run and the projectiles had to be fired with much loss of accuracy from improvised positions in Holland, nearly twice as far from London.

This same period saw much development of the active defences against flying bomb attack. There were to be three defence belts—a balloon barrage on the outskirts of London, a gun belt just beyond that and then a fighter aircraft zone. Valuable supplies of electronic predictors and radio proximity fuses for the gunners were obtained from the United States.

In all, nearly fifteen months passed between the first minute to the Prime Minister from the Chiefs of Staff Committee in April 1943 and the opening of flying bomb attack in the middle of June 1944. Looking back on this period of preparation Mr Churchill summed up: 'Not a day was wasted. No care was lacking . . . The whole story may stand as an example of the efficiency of our governing machine and of the foresight and vigilance of all connected with it.'<sup>1</sup>

### The 'V.I.' Attacks

On the night of the 12th-13th June the first pilotless aircraft fell at such scattered points as Cuckfield in Sussex, Swanscombe near Gravesend, Platt near Sevenoaks and Bethnal Green. The only casualties were at Bethnal Green where six people were killed and nine seriously injured. At the Chiefs of Staff Committee meeting the following morning bombing counter-measures were discussed. As yet only seven days had passed since D-day; although no extensive diversion of aircraft from the Continental bridgehead seemed desirable until heavier attack developed it was agreed that the four

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<sup>1</sup> W. S. Churchill, *op. cit.*, Vol. V, p. 213.

sites believed to be connected with supply should be heavily bombed and that all launching sites should be attacked whenever effort could be spared.

Three days later a heavy and sustained bombardment by the new weapon began. In the first twenty-four hours 151 pilotless aircraft were reported by the defences, 144 crossed the coast of England and 73 reached the London area. On the morning of 16th June the Home Secretary made a statement in the House of Commons. Attacks on this country by pilotless machines—the enemy's much vaunted secret weapon—had begun. Counter-measures had already been taken against these missiles and would be applied with full vigour. Since it was most important not to give the enemy any information which would help him in directing his fire the Government decided that raids directed against areas south of a line from the Wash to the Bristol Channel would only be reported as having occurred in Southern England.<sup>1</sup> The Cabinet agreed that guns and balloons not already in position should be deployed according to a pre-arranged plan; counter-bombing was to begin on as big a scale as possible so long as the battle in Normandy did not suffer, and the general public were to be encouraged to carry on as normally as they could. On 19th June the Cabinet ruled that in future these weapons should be described as 'flying bombs' instead of 'pilotless aircraft.'

During the next two weeks the attack continued at the rate of about 100 flying bombs a day. Of these, fighters were bringing down about thirty per cent. and the static defences some eight to ten per cent., but more than half the bombs which crossed the coast were reaching Greater London. In the first fortnight about 1,600 people were killed, 4,500 seriously injured and 5,000 slightly injured; over 200,000 houses were damaged to a varying extent. Although the total weight of high explosive dropped was much less, the rate of casualties during this first fortnight was as high as that of September 1940, the worst month of the 'Blitz'; the proportion of persons killed to those seriously injured was, however, much lower. The reason for this high injury rate was that the flying bombs did not come only at night when people were under cover but fell at all times throughout the day. As for the damage to houses, the superior blasting power of the flying bomb was causing much greater destruction to property than the same weight of bombs had caused in previous bombing. It was estimated that if damage at the rate experienced during the first fortnight were to continue for two months as many London houses would suffer as had done so during the nine months of the 'Big Blitz'.

Although the weight of this attack was by no means yet up to some of the more alarming estimates of the previous nine months, it was sufficient to cause the Government considerable concern. The Home

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<sup>1</sup> H. of C. Deb., Vol. 400, Cols. 2301–2303, 16th June 1944.

Secretary justly claimed that after five years of war the people were not as capable of standing up to the strain of air attack as they had been during the winter of 1940-41. If flying bomb attacks were to be supplemented by rocket attacks, the civil defence machine, now much weaker in numbers than during the 'Big Blitz', might prove unable to cope with them and a serious deterioration in the morale of the civil population might set in. Mr. Morrison urged therefore that these attacks should be treated as a major element in the war strategy and that priority should be given to vigorous counter-measures. The War Cabinet agreed that more steps should be taken to mitigate the effects of these attacks. Fresh efforts should be made to improve the amenities in public shelters and to encourage the maximum use of shelters at night so that workers could get some undisturbed sleep; the highest priority should be given to the repair of damaged houses and labour should be brought in from other areas for this work; plans for the evacuation of priority classes should be reviewed to ensure that they could be operated at short notice; everything should be done to provide emergency feeding facilities and adequate accommodation for the homeless. On 6th July the Prime Minister made a comprehensive statement in the House of Commons on the flying bomb position. He described the fifteen months of intelligence reports and the planning of counter-measures before the attack had opened. He thought it was essential neither to underrate nor to exaggerate the importance of this new form of attack. Members of the House might, however, be surprised to learn that the total number of flying bombs launched had killed almost exactly one person per bomb. The Prime Minister went on to mention the various measures on repairs to houses, casualty services, shelters and evacuation that had been and were being put into action. Strong counter-attacks against the launching sites and also targets in Germany would continue to be made. There could, however, be no question of allowing the 'slightest weakening of the battle in order to diminish in scale injuries which, though they may inflict grievous suffering on many people and change to some extent the normal regular life and industry of London, will never stand between the British nation and their duty in the van of a victorious and avenging world'.<sup>1</sup>

Although no disturbing effects on morale were evident during the early weeks of this new attack, the Government was aware of the great strain under which people in the areas under attack were now living and working. As the attacks were likely to continue, the most effective way to ease this tension was by doing everything possible to reduce the number of bombs getting through to the capital. From about the middle of July the offensive against 'Cross-bow' targets was therefore increased and the anti-aircraft and

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<sup>1</sup> H. of C. Deb., Vol. 401, Cols. 1322-1339.

fighter defences reorganised. It should be added that the highly mobile deployment from all over the country of the anti-aircraft defences, and the performance of these A.A. units after some three years (in many cases) of 'waiting inactivity', formed one of the outstanding defensive campaigns of the war.

Meanwhile the Civil Defence Committee was considering the measures planned to follow the opening of flying bomb attack. Although a large number of bombs were falling in London and the South-East and were causing considerable damage and casualties, the total effect was different both in degree and in form from what had been expected. In addition, the defence measures of anti-aircraft guns, fighter aircraft and balloons were proving more effective than had been anticipated. The immediate evacuation of priority classes and the extensive use of London's deep shelters were much less urgent than the planners had imagined and action to put these plans into operation was, therefore, postponed. On the other hand the damage to houses and other buildings was much greater than anticipated and the need to organise first aid repair squads became an unexpectedly pressing problem.

The movement of school children from the affected areas did not start until 3rd July, three weeks after the attacks had begun. There had, however, been a large amount of private evacuation, and by the beginning of July there was some criticism about the absence of an official scheme. One reason for delay was the need to prevent undue pressure on the railways which were heavily involved in moving supplies to the Continental bridgehead. Registration for the evacuation of school children opened on 1st July and for mothers and young children on 8th July. By 17th July some 207,000 of the priority classes had registered and nearly 170,000 had been evacuated. Private evacuation however, had taken place on a much more extensive scale; by the third week in July it was believed that some 530,000 persons had made their own arrangements to leave London. Just over a month later it was estimated that 1,450,000 had left, of whom 275,000 were persons sent out under the official scheme. Government policy was to encourage the priority classes and those without work to do to leave the areas under attack and to stay away.<sup>1</sup> By the end of August, however, there was a considerable flow back from the reception areas—a movement that was to continue steadily even when the rocket attack began.

The flying bomb attacks caused large new demands for 'Morrison' shelters. At the outset the stock of these shelters in London was

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<sup>1</sup> Private evacuation of people with no essential work to do able to leave London at their own expense would 'assist our affairs' said the Prime Minister, and while no compulsion would be introduced every mother who wanted to take her child to safety or send her school-age children to the country would have the chance to do so. (H. of C. Deb., Vol. 401, Cols. 1322-1339, 6th July 1944.)

about 68,000 and by the first week in July less than 25,000 of these remained and the daily demand amounted to about 6,000. The Ministry of Home Security was therefore asking other Regions to transfer to London any stocks they had in hand, as well as any shelters, including 'Andersons', they could collect from householders prepared to surrender them. Although demand was now dropping, on 17th July the Civil Defence Committee decided to place orders with manufacturers for a further 100,000 shelters, but there were break clauses in the contracts in case the situation altered radically.

The new Tube shelters which had been partially earmarked for Government staffs were not opened during the first three weeks since there was no real demand for them; there was no need to use them for civil servants and the numbers sheltering in the ordinary Tube stations were falling.<sup>1</sup> To begin with it was agreed to hold these shelters in reserve in case of worse things to come, but on 9th July the first one was opened and soon after two more were put into operation. They were available only to ticket holders, and tickets were issued to existing Tube shelterers and to local authorities, especially for people made homeless by the raids. The Ministry of Home Security had feared both that the opening of these new deep shelters might cause discontent among those who could not use them and that it might be difficult to get people out of them during the day. However, after six weeks of their use it reported that there was no sign of any 'deep shelter mentality'. By September, space in the deep shelters could be allocated at week-ends as billets to troops on leave, and in October two of the shelters were closed.

While evacuation and deep shelters had produced fewer difficulties than expected, the damage to houses was much more serious and had become, in fact, the biggest civil problem of the new form of attack.<sup>2</sup> Three weeks after these attacks began there was a back-log of 194,000 houses awaiting repairs; over 20,000 were being damaged each day, and in spite of a labour force of 33,000 men arrears were mounting at the rate of 6,000 houses a day. The War Cabinet urged that every effort should be made to bring in more building labour; powers of direction were used but difficulties arose from lack of billets and amenities for the drafted men. By the middle of July the labour force had been increased by about 10,000 and the average rate of repairs now exceeded the daily rate of damage. The repairs carried out by these squads were, however, only first aid measures to enable people whose houses were not

<sup>1</sup> See pp. 531-532, 540, 545-546, 651.

<sup>2</sup> This is described in greater detail in *Works and Buildings* by C. M. Kohan in this series of histories, pp. 222-235.

seriously damaged to use them again. On 7th September it was reported that arrears of damaged houses were down to some 27,000, but most houses repaired had only received a 'field dressing' and with winter approaching it was going to be necessary to deal with some of the longer-term repairs soon. During the nine months of flying bomb attack, which included also six months of rocket bombardment, some 29,400 houses were destroyed and 1,255,000 damaged but repairable in the London area, and 2,200 destroyed and 165,000 damaged but repairable elsewhere. Though the physical damage to war factories and vital communications was comparatively small, many public buildings such as churches, hospitals and schools once again appeared in the casualty lists.

During these first months of flying bomb attack some modifications were made in the warning system and the black-out, relaxations were made in fire guard duties and, in the interests of morale, measures were taken to improve supplies of beer in bombed areas. As regards warnings, it was quickly agreed to sound the alert only when batches of flying bombs were arriving, and later a system of roof-spotters giving imminent danger warnings was organised by local authorities; most factories and firms already had their own spotters who could advise when taking cover was necessary, thus reducing interruption of work to a minimum.

In all, the flying bomb attacks on Great Britain lasted from 12th June 1944 to 29th March 1945.<sup>1</sup> The first and most important phase was from 12th June to 5th September 1944. Most of the bombs launched during this period were from sites on the coast of France between Dunkirk and Etretat. During this phase some 6,725 flying bombs were reported by the defences, 3,463 were destroyed by guns, fighters and balloons, and 2,340 reached the target area. Casualties in London and elsewhere amounted to 5,475 killed and 15,918 seriously injured. London south of the Thames bore the brunt of this bombardment, especially the boroughs of Croydon, Wandsworth, Lewisham, Camberwell, Woolwich, Greenwich, Beckenham and Lambeth. But a large number of bombs fell short of the target in 'bomb-alley' in Kent and many in rural areas of Sussex, Surrey and Essex; and a high proportion of those brought down by the A.A. and fighter defences fell in Kent.

By the middle of August there was a general feeling among those responsible for operations that ascendancy was being achieved over this weapon. Despite bombing of sources, the weight of attack had remained fairly static but the counter-measures had notably developed. Only 17 per cent. of the bombs reported between 16th

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<sup>1</sup> For their distribution, by counties and by months, see Appendix V. During the main phase of the offensive the majority of bombs directed at London crossed the coast between Cockmere Haven and St Margaret's Bay.

August and 5th September fell in the Greater London area, compared to 33 per cent. during the previous month and 44 per cent. during the first five weeks. By the beginning of September the launching areas in North-Eastern France were over-run by the Allied advance; this ended the first and main phase of the attack although it was not the end of the flying bombs. When the launching sites were lost the Germans still had an alternative means of launching the bombs—from aircraft. As early as July and August they had made some use of this method to attack Britain from the east, and once the land sites were put out of operation they strove to develop it. There was a brief lull for a few days when the last land sites were captured; but on 16th September the attack was re-opened from air-launching units in Germany. This new stage in the offensive presented the British defences with special difficulties. Although he was unable to send over as many bombs the enemy had greater mobility for he was no longer tied to fixed ramps; our anti-aircraft belt had to be moved and difficult gunnery problems were caused by the bombs flying at lower heights than previously. During this phase of air-launched bombs from 16th September to 14th January 1945 some 638 bombs were reported by the defences; 403 of these were destroyed by guns or fighters and only 66 reached the Greater London area.<sup>1</sup> Most of this attack was directed against London. But other centres also became targets including Manchester, against which 30 flying bombs were launched on Christmas Eve, 1944, though only six of them came down within ten miles of the centre of the city, and Oldham, Lancs., where on the same night 27 people were killed and 37 seriously injured.

The last spasm of flying bomb attack came between 3rd and 29th March 1945 from launching sites in Holland. The Germans had by this time increased the range of the weapon. However, counter-measures had also made such progress that during this last phase of the campaign, of the 125 flying bombs which approached this country 87 were shot down by A.A. guns and 4 by fighters, and only 13 bombs reached London.<sup>2</sup>

How did the people of London and the South-East stand up to the flying bomb attacks? How effective were the depleted but re-organised civil defence services?

Two weeks after the opening of the new offensive a Cabinet Committee reported that civilian morale remained 'wonderfully good' though there were 'unmistakable signs of weariness'. It was natural that the attack should have its disturbing effects. In contrast to the regular routine of the Blitz when danger was

<sup>1</sup> Report by Air Chief Marshal Sir Roderic Hill to the Secretary of State for Air, 17th April 1948. Supplement to the *London Gazette* of 19th October 1948, p. 5601.

<sup>2</sup> *Ibid.*, p. 5603.

concentrated during the hours of darkness there was now no relief from danger at any hour of the day or night. The automatic nature of the pilotless weapon, the purely arbitrary destruction of a bomb that might fall anywhere at any time and with no particular target in view, seemed to many, much worse than 'orthodox' bombing. There was much nervous strain involved in listening to the 'buzz-bombs' or 'doodlebugs', watching them and waiting for the engine to cut out. Flying glass was a special danger and people were warned to take cover on the sound of a bomb diving or the engine stopping, and later on the sounding of imminent danger warnings. The vast damage to houses inevitably caused great domestic upheavals. To begin with there was a definite decline in production in London, due to an increase in the rate of absenteeism, to loss of time in actual working hours through workers taking shelter and to lowered efficiency through loss of sleep and anxiety. The extension of the industrial alarm system and the increase in the labour force repairing damaged property, however, soon reduced these early signs of disturbance. Within a few weeks evacuees were returning to London, shelters were less full and most people were going about their normal tasks as usual.

For the civil defence services the new weapon demanded new tactics. In many ways these attacks were much easier to contend with than ordinary bombing. Firstly, most of the incidents were isolated, so that services could be directed in strength to the affected area without constant competing demands on the personnel at every turn. Secondly, the fall of the bombs could be spotted within a matter of seconds by high-placed observation posts either by night or by day, so that rescue and first aid squads could be on the spot very quickly. Thirdly, the penetrative power of this weapon was slight so that incidents rarely involved the complications of broken gas, electricity or water mains, and there was also little tendency for fires to break out. On the other hand the bombs could fall at any time in crowded thoroughfares; the proportion of casualties in the streets was much higher than ever before while the proportion of trapped casualties was lower. At night time, since there were no German eyes above, the use of artificial light was less restricted and searchlights could be used for rescue work.

By now the numbers in the civil defence services had been substantially reduced<sup>1</sup> but the restricted area of attack made it possible to bring in reinforcements from unaffected districts. The need for a close network of civil defence posts had now largely gone, and instead a system of flying columns was organised and directed to each incident from observation posts. In Westminster, for instance, there were such posts on the high tower of the Victoria Coach Station and

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<sup>1</sup> See Chapter XIII, pp. 562-563.

on top of the London Transport Offices in Broadway and elsewhere. Within about three minutes of a flying bomb falling, a flying column of heavy and light rescue vehicles, ambulances and a mobile aid post could be directed to the scene. At day-time incidents loud-speaker vans were sometimes used to control the sight-seeing crowds which obstructed the ambulances and rescue vehicles. After the immediate needs of rescue and first-aid had been met, other facilities were brought in. It was often found better to bring in mobile canteens, bath and laundry units rather than to make the people concerned go to the facilities. The large number of houses damaged by each bomb called for speedy action if the need for providing a vast amount of rest centre accommodation was to be avoided. First aid repair squads were, therefore, quickly sent to the perimeter of the damage, and arrangements for furniture removal and storage took an important place in post-raid procedure. The National Fire Service observation posts were used similarly to secure prompt despatch of N.F.S. 'Task Force' units.

Dover, it must be added here, suffered in September its most severe shelling of the war. The enemy guns across the Channel fired 16 in. and A.P. shells by day and night into the town keeping it under almost continuous alert. Owing to the cave-shelters casualties were small, but hardly one house in the centre of the town escaped damage. For a time normal life almost stopped and for several days no deliveries of bread or milk could be made. Folkestone, Ramsgate and Deal were also shelled though on a much smaller scale.<sup>1</sup>

### Long-Range Rocket Attacks

While the flying bomb attack held the centre of the stage the Government had also to bear in mind the possibility of worse to come. So far the attack on London had been made by only one of the two weapons that the Germans had developed for long-range bombardment. It will be remembered that the early rumours of the new 'retaliation' weapons had been restricted to long-range rockets; not until some months later was it learnt that the first danger was to be the pilotless aircraft.<sup>2</sup> The menace of the rocket was still, however, most serious, and although technical difficulties had delayed its arrival, it was clear that the Germans were still hoping to play this trump card. Flying bombs had caused less disruption to civilian life and morale than had been feared, but a new and heavy attack by rockets might bring grave repercussions.

Some early reports on the rocket had spoken of a gigantic weapon weighing seventy to eighty tons and carrying a warhead of some

<sup>1</sup> Some 2,226 shells fell on Dover during the war and on the worst day, 26th September, nearly 60. On occasions shell-warnings lasted for 13 hours.

<sup>2</sup> See pp. 646-649.

ten tons of explosive which would descend on London with little or no warning. Fortunately these proved to be exaggerated as well as premature. During 1944, however, more precise evidence on weight, the method of launching, performance and organisation to control the operation of the rocket began to come in from Polish agents, from reports about a rocket which accidentally fell in Sweden and from prisoners of war. It seemed that the enemy had brought the lighter 'A4' rocket to an advanced stage of development, though there were still some technical difficulties. An estimate submitted to the War Cabinet's Crossbow Committee in July spoke of a much lighter rocket, weighing perhaps thirty to forty tons with a warhead of five to ten tons and a range of 150 miles. It was believed that the Germans had produced about 1,000 of these rockets which could be launched from fairly simple and quickly improvised sites. Although there was no reliable information about the movement of projectiles westwards from Germany, 'it would be unwise', said the report, 'to assume that a rocket attack is not imminent'.

This information came as a bombshell to the War Cabinet. The rocket menace, a major concern of the Government during the summer and autumn of 1943, had receded into the background during the past few months. Although the first half of 1944 had seen much activity in rocket intelligence work, the evidence had been so incomplete and unsubstantiated that little had been done to keep the War Cabinet informed as stage-by-stage the puzzle was pieced together. It was not, in fact, until July that a picture of any coherence emerged. When the flying bomb attack began in June, the question naturally arose as to whether this might be supplemented by rocket attack. The answer, given in the July report to the Crossbow Committee, that the Germans had already produced a substantial number of rockets which might be directed against us very shortly surprised and disturbed the War Cabinet. The planning of counter-measures now began again in an atmosphere that had much of the urgency of the anxious months of 1943.

The Home Secretary, responsible as he was for the protection of the civil population and for the maintenance of their morale, tended to see the position at its worst. If 1,000 rockets were fired against London, he said (on a basis of calculations made by the Research and Experiments Department of his Ministry which assumed a 7 ton warhead), about 18,000 people would be killed and possibly three times as many injured; a single rocket might demolish or render uninhabitable all houses within a radius of 400 yards of its impact. So far the civil defence services were coping satisfactorily with the flying bomb attacks, though house repairs were well in arrears. If, in addition to the flying bombs, rockets were to arrive at all frequently, civil defence resources would be quickly exhausted, hospital

services might be swamped and police, transport and emergency services for accommodating and feeding evacuees might be overwhelmed by an exodus of people from the capital. In a memorandum to the War Cabinet the Home Secretary urged that rocket attack should be regarded as an almost certain major effort by the Germans to avoid sheer defeat. He believed that the rockets might well affect the conduct of military operations. We had boasted rightly of our air superiority and military strength. We would be expected to use our resources to eliminate attacks on the Metropolis by the new weapons as we had virtually eliminated raids by ordinary aircraft. He asked for a decision from the War Cabinet on the vital issue of evacuation, the policy on which would, as on former occasions, determine what was done in other spheres of civil defence.

The War Cabinet accepted the Home Secretary's recommendations and agreed that immediate action should be taken. Responsibility for preparations to meet the rocket attack was allocated to various Ministers and groups of Ministers. This work was to be supervised and co-ordinated by a new Ministerial Committee, known as the Rocket Committee and later as the Rocket Consequences Committee. The Committee met first on 3rd August and considered questions of evacuation, including possible mass refugee movements and the establishment of reception centres and feeding stations at the fringes of the Metropolitan area to provide for refugees on foot, the removal of some Government Departments from London, the dispersal of important industries and key production units, the emptying of hospitals and the feeding of workers remaining in London.

While the plans had to allow for the rockets causing great disturbance in the normal life of the capital and a certain amount of unorganised exodus, the Government's policy would still be to urge Londoners to stand firm. It was not seriously believed that they would do otherwise. In contrast to pre-war fears of vast crowds of panic-stricken refugees, it now seemed to the Government that the people who had withstood the Blitz and the flying bombs would hold fast under this new form of attack. In the meantime, however, it would be wise to encourage the evacuation of mothers and children and other priority classes before the rocket attack began, and to this end the Prime Minister made a statement in the House of Commons on 2nd August. In spite of fantastic German stories of London being in panic under a perpetual pall of smoke and flames as a result of the flying bomb attack, he said, the morale of Londoners could be judged by the fact that many of the evacuation trains had come back to London as full as they went out. 'While a daring and adventurous spirit' was to be commended, this needless

risk and movement should be discouraged. It was still possible that the Germans would try to bombard us with long-range rockets, and he did not want to minimise the ordeal to which we might be subjected, except to say that he was sure it was one we would be able to bear. The Government strongly advised those for whom official evacuation facilities had been provided, and others with no war duties in London who could make their own arrangements, to take the opportunity of leaving the capital 'in a timely, orderly, and gradual manner'.<sup>1</sup> The evacuation areas were now to be extended to include 27 boroughs and urban districts around the Metropolitan area and all mothers with children of school age or under, as well as the usual priority classes, could now participate.

Throughout August planning went on vigorously. In drawing up their schemes for the possible effects of the latest and most alarming of Hitler's weapons, the Government had now to steer an uneasy course between encouraging those who had work to do in London to stand fast and at the same time preparing to contend with some degree of unorganised exodus. It might well be a mistake, for instance, to repeat too often the Prime Minister's exhortation that all with no definite work to do should leave, lest this should undermine the confidence of those who ought to stay. When the rockets began to fall it might be difficult to achieve an orderly evacuation of the priority classes and of personnel engaged on Government work if the railway stations were besieged by refugees. On the sheer mechanics of transport it was difficult to formulate any scheme which would avoid congestion at the stations without involving a certain amount of prior publicity and this might injure the stand-fast policy and be objectionable on security grounds. A scheme was worked out by the Ministry of Health whereby travel vouchers at a flat rate of 5/- per adult could be issued by local authorities to would-be refugees giving them the right to a place on a train that could take them out of the danger area. To handle those moving out of London by road, it was estimated that temporary accommodation in rest and reception centres within forty miles of London should be provided for a maximum of 700,000 people.

As well as planning to evacuate the priority classes and to deal with any general exodus, it was also necessary to co-ordinate arrangements to move a certain number of civil servants and key industrial personnel. If the rocket attack caused serious dislocation in London, it would be vital to maintain the machinery of Government and to prevent major disturbances in the production drive. There were now about 130,000 persons on the headquarters staffs of Government Departments in London; of these 20,000 were in poor

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<sup>1</sup> H. of C. Deb., Vol. 402, Cols. 1476-1478, 2nd August 1944.

buildings, approximately half of which were without shelters. 'Citadel' accommodation was available for not more than 8,500. An evacuation of about 85,000 civil servants was, therefore, visualised, while the remainder, other than those in well-protected accommodation, would have to be dismissed or 'stood off'. As far as the movement of vital industry from London was concerned the principle was accepted that only production which was unique or nearly unique, or of special importance to current operations or largely concentrated in the London area should be interfered with. The moves were to be of personnel rather than of plant, with workers going to reception factories in safer areas. The Ministry of Production estimated that it might be advisable to evacuate some 65,000 key workers, and these with their families might amount to an organised dispersal of about 160,000 persons.

The evacuation of patients from London hospitals was begun immediately and was in progress throughout August. By the end of the month 15,734 patients and staff had been evacuated and 28,249 beds were vacant to receive rocket casualties; at a few hours' notice a further 8,179 beds could be made available by discharging patients to their homes.

Schemes were also drawn up by the Rocket Consequences Committee for the maintenance of amenities in London. The most important of these was concerned with the organisation of labour for first aid repairs to buildings, demolition and clearance and the restoration of essential services. The existing labour force could be supplemented by the Armed Forces so that up to 120,000 men could be brought into action for this work. It was agreed that military direction should only be used in connection with demolition and clearance and the maintenance of essential services, while house repairs should continue to be organised under the existing arrangements. Plans were also made for the emergency feeding of workers remaining in London, and for the control of information about rocket attacks.

But hardly had all these schemes been worked out than the atmosphere of expectation which had produced this urgent activity changed. During the second half of August two new factors emerged to alter future prospects. Firstly, the latest intelligence reports pointed to a much less destructive weapon than had been described in the estimate given in July.<sup>1</sup> Secondly, the rapid advance of the Allied armies threatened to drive the Germans from those areas of Northern France from which it was presumed that a rocket attack would be launched. By the end of August the scientific experts reported that, while the Germans might still try to launch the rocket against us, 'the still existing technical defects, the relatively small warhead, the

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<sup>1</sup> The total weight of the rocket was now given as approximately 12 tons with a warhead of one ton.

increasing difficulties of supply and our threat to the operational area' led them to believe that 'the magnitude of the threat' was small. The latest appreciation of the possible weight of attack from a combination of rockets and flying bombs amounted to a bombardment less than twice as heavy as the worst week of the flying bomb attack. On 1st September the Rocket Consequences Committee agreed that, as it was now increasingly unlikely that there would be bombardment of London on a scale sufficient to warrant exceptional remedial measures, plans to put these into effect should so far as possible be kept on a paper basis.

During the next few days the situation improved still further. On 6th September the Vice-Chiefs of Staff reported that all areas from which flying bombs or rockets might be launched against London had been, or were about to be, occupied by Allied troops—'there should be no further danger to this country from either of these causes, except for the possibility of the airborne launching of flying bombs.' On the following day the Home Secretary obtained the approval of the War Cabinet for the suspension of all preparations and such evacuation schemes as were actually being carried out, except where, as was the case with some of the arrangements for the dispersal of London production, it would be more trouble to reverse what was being done than to complete it. Civil defence preparations were now being swamped by a wave of optimism that was in sharp contrast to the sober urgency with which the Rocket Consequences Committee had begun its work just over a month earlier. On 7th September Mr Duncan Sandys, in a lengthy review to the Press of the attacks that had taken place, felt able to speak of the Battle of London being over 'except possibly for a last few shots'.

Such complete optimism was, however, somewhat premature; the battle was, in fact, by no means over. During the next six months, over 1,000 rockets and nearly 500 flying bombs were still to fall in the United Kingdom. The rocket attack began on the very day after Mr Sandys' press statement. At about twenty to seven in the evening of 8th September Londoners travelling home from work or preparing their evening meals were startled by a sharp report rather like a clap of thunder. The first rocket had fallen at Chiswick, killing three people and seriously injuring another ten. Sixteen seconds later another rocket fell at Epping but did little damage. During the next ten days rockets arrived at scattered places in South-Eastern England at the rate of about two a day.

The rockets were of the type and weight that the latest Air Intelligence reports had forecast. The radar stations set up to detect the firing of rockets from France had not proved very effective in plotting the rockets fired from Holland, and there could be no question of operating a warning system until their techniques had

been improved considerably and their deployment changed.<sup>1</sup> While the situation on land was so promising, and as rockets seemed to be only a little more destructive than flying bombs, the Chiefs of Staff did not think any elaborate counter-measures justified and they advised against any announcement to the public that they were under rocket attack at this stage.

The scale of attack against the United Kingdom did not, as yet, warrant counter-measures involving any diversion of force from the offensive against Germany. However on 8th September the first rocket reached Paris, and soon afterwards other French and Belgian towns began to suffer attack. Rockets, and shortly afterwards flying bombs too, had become not only strategic weapons directed against civilians but also—as shorter distances gave greater accuracy—tactical weapons in the overseas military operations.

On 17th September the Allied airborne operation against the lower Rhine at Arnhem caused German rocket firing troops to move eastwards, and for a week no more rockets fell in Great Britain. On 25th September, however, Norwich became the target, and from that date until 12th October, 36 rockets fell in this area though none fell in the city itself. The attack on London was resumed on 3rd October and for the next few weeks the capital received an average of two or three rounds a day. During November the scale of attack rose—the average number of rockets arriving rose to four a day, and at the end of the month to six a day. Much less could be done than in the case of the flying bombs by the British active defences. The rockets could not be intercepted by aircraft, guns<sup>2</sup> or balloons, and their firing points were mobile and difficult to trace. However, fighter-bomber sweeps and armed fighter reconnaissance against suspicious points in the firing areas were increased during November and probably helped to diminish the attack on London towards the end of 1944. By the middle of December the scale of attack was down to an average of four rockets a day and by the end of the month to three-and-a-half.

Although the German effort against London was by now lower than in previous weeks, the Home Secretary suggested to the Chiefs of Staff on 22nd December that more powerful counter-measures—in particular heavy bomber attacks on the launching areas—should be applied against the Hague area. But the Chiefs of Staff were

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<sup>1</sup> On 25th September 1944 it was reported that up to date, the performance of the radar and sound ranging units had been such that, if warnings had been based on it, only once out of 16 times would the warning have been followed by an incident in London and only once out of 6 times by an incident anywhere else, and that, moreover, on three occasions between 14th and 18th September incidents had occurred where no warning could have been given.

<sup>2</sup> Towards the end of 1944 and during the early months of 1945 there were experiments in the use of anti-aircraft artillery to fire at approaching rockets and explode them in the air.

strongly opposed to this suggestion—first, the attacks would mean heavy loss of life among Dutch civilians and damage to Dutch property without achieving anything more than a temporary interruption of rocket firing, and second, the bombing effort could not be spared from other more vital targets—and it was agreed that no radical change should be made in the policy of counter-measures.

From the angle of civil defence, the rocket attack was very little different from the flying bomb attack. Rockets had a greater penetrating power, caused more violent devastation immediately around their point of impact and were more likely to damage public services than flying bombs. On the other hand the area affected by their blast was smaller. No important new civil defence problems arose; the civil defence services had been able to meet the demands made on them, there had been no undue pressure on shelter accommodation and no rush of evacuees out of London. The repair of damaged property continued to be a major task but on much the same scale as before. There was no call for a new evacuation scheme, and anxiety was felt by the Government, not about a disorganised exodus of refugees, but because such large numbers of people were pouring back into London when so many houses, schools and other buildings had been damaged. In the middle of November, for instance, when the rocket attack was fairly heavy, it was estimated that the population of London was only 8 per cent. lower than it had been at the beginning of the flying bomb attacks; by January it was only five per cent. lower and was rising at the rate of 10,000 a week.

During January and February the number of rockets increased again. Moreover the accuracy of fire seemed to have improved and a higher proportion were falling during the day. On 26th January there were seventeen incidents, thirteen of them in the London area, the highest so far recorded in one day. Casualties during this period increased sharply—the weekly casualty list was twice as high as during December.

By now the radar stations were detecting a large number of rockets early enough for warnings to have been sounded in the London area if a warning of fifty to sixty seconds had been acceptable to the civil defence authorities. It was, however, decided to investigate the possibility of warnings of up to four minutes, and in the meantime to continue without public warnings.

Intensified fighter-bomber attacks in February and March were followed by a perceptible slackening in the rocket offensive. Unfortunately a number of serious incidents kept the casualty lists high. One of the worst of these was caused by a rocket falling on the morning of 8th March on Smithfield Market, killing 110 people and seriously injuring 123. The German offensive came to an end on 27th March, when the one thousand, one hundred and fifteenth

rocket to fall on this country or within sight of shore, fell at Orpington, Kent. On 2nd May on receipt of a report from the Joint Intelligence Sub-Committee that there was no longer risk of flying bomb attack and only very slight chance of rocket attack, the Chiefs of Staff approved the discontinuance of all counter-measures.

The rocket campaign had lasted for seven months. During that time the Germans fired at least 1,300 rockets at London and some 40 or more at Norwich. Five hundred and eighteen rockets fell within the boundaries of the London Civil Defence Region. Two thousand five hundred and eleven people were killed and 5,869 seriously injured in London, and 213 killed and 598 seriously injured elsewhere.<sup>1</sup> The casualty figures would have been substantially lower but for a number of unlucky incidents in which rockets chanced to hit crowded buildings. Among the worst incidents were direct hits on a crowded shop in Deptford on 25th November 1944, on Smithfield Market, and on a block of flats at Stepney on 27th March.

## Problems of the Services

The last two chapters have traced the concentration of effort after January 1943 on forming the Civil Defence Reserve, and the development of the Fire Guard Plan. As a result of the former process a nucleus was being given a thorough operational training, while the Plan provided training in fire prevention for an enormous civilian body. The 'Little Blitz' of the early months of 1944 provided a test for this Plan, and although the test proved only a short one useful experience was gained. When preparations for the invasion of Europe gained momentum determined interference by the German Air Force was expected. The civil defence services, especially in the south and south-east, were therefore braced for action.

The arrival of the flying bomb, and later the long-range rocket, cannot be said, therefore, to have caught the civil defence services off balance. These weapons required a change of tactics; but both were in important ways easier to deal with than the previous bombing.<sup>2</sup> The fall of flying bombs and rockets could be rapidly spotted. Incidents were more isolated, and much greater concentration of the necessary services at each incident was possible. The approaches to the scene and the water and gas mains were not so likely to be damaged, nor fires to be caused. Flying columns of mobile units, rescue parties and ambulances were held at readiness and dispatched as soon as the locality of an incident was reported and this remained

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<sup>1</sup> Report to the Secretary of State for Air by Air Chief Marshal Sir Roderic Hill, Supplement to the *London Gazette*, 19th October 1948. The final casualty figures were slightly higher (see Appendix II).

<sup>2</sup> See pp. 659-660, 667.

the standard method of dealing with the results of attacks by V-weapons.

While much had to be done to recast plans for shelters, warnings, and evacuation, the biggest civil problem turned out in practice to be the repair of houses. The amount of debris caused by the V-weapons was enormous and the manpower available to deal with it was limited. The rehabilitation of homes was a vital factor in the maintenance of morale, but while the attack remained intense the toll of urgent demolition and essential first aid repairs mounted steadily. Forces to cope with this were sought in various directions and reinforcements were brought in from Regional Columns and any other available source from Regions not under attack. In Essex, for example, the Works Regulating Centre set up for 'Overlord' proved very valuable for mobilising labour for first aid repairs.

The continuous nature of the V-weapon attacks involved constant manning of civil defence posts in all the vulnerable areas with long hours or duty for both whole-time and part-time personnel. This was borne willingly and cheerfully, but volunteers to reinforce the Wardens', Report and Control and Rescue Services in London and the south-east were asked for from other Regions. The response was immediate and no Region approached had any difficulty in providing enough volunteers to take a share of duty in the vulnerable areas. Even though the arrangements by which whole-time wardens could be sent to London for reinforcement did not apply to Scotland, 122 part-time Scottish wardens as well as 173 whole-time members of the Rescue Service did voluntary duty in London. The Fire Services too, were heavily reinforced from other areas.<sup>1</sup> The C.-in-C., Home Forces instructed all Home Guard commanders to place a generous interpretation on the conditions under which the Home Guard could support the civil defence services, and required all members not needed for other duties to turn out with street Fire Parties covering their homes. In Tunbridge Wells Region especially heavy calls were made on the W.V.S. as the result of flying bomb attack; mobile canteens fed rescue workers and members of the Housewives' Section helped to clear and put in order the many houses damaged by bombs and blast. It is worth mentioning that in these last few months the civil defence services made use with some success of trained dogs to locate casualties buried under debris.

### 'Stand-down'

As the Allied invasion progressed the enemy was driven farther into Europe and his air potential so reduced that the threat to this country from piloted aircraft diminished daily. Even during the period of the attacks by V-weapons, most of the country beyond the

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<sup>1</sup> See Chapter XI.

target areas in the south and south-east was considered immune from further attacks from the air.

On 7th September 1944, therefore, further relief from fire guard duties was authorised in many parts of the country<sup>1</sup> and on 15th September it was decided to make immediate substantial reductions in the civil defence organisation in all Regions except Cambridge, London, Reading and Tunbridge Wells.

This involved the release of the bulk of whole-time personnel in all services without any continuing obligation to undertake part-time service; a substantial reduction in part-time strength; and the reduction of maximum stand-by duty of part-time personnel at posts and depots whether by day or night, subject to certain necessary exceptions, to 12 hours in every four weeks.<sup>2</sup> At the same time further instructions were sent out on matters connected with the discharge of officers of the Fire Guard Service under local authorities, whose areas were to be deprescribed or subject to complete relaxation of fire guard duty.<sup>3</sup>

In October it was decided to extend the scope of these reductions to the remaining four Regions. The scale of preparation in these Regions had necessarily to be higher than elsewhere, so that the reductions were not quite so drastic and variations in practice were permitted.<sup>4</sup> A circular was also sent to all Regions instructing them to reduce forthwith to a care and maintenance basis all except eleven of the operational units of the Civil Defence Reserve.<sup>5</sup> The establishment of these remaining operational units was amended. Applications for release were invited; if the numbers not seeking release were sufficient to complete the new unit establishment, all applicants could be released without delay. If all who wished to go could not be released, the principle of 'first in, first out' was to be adopted—with some modifications to give priority to those such as building trade workers urgently required to meet industrial needs.

If the numbers wishing to remain in the units were above the requirements of their Region, they could be offered transfer to another Region. Shortly after the issue of this circular an Overseas Column with a strength of 1 Headquarters Group and 4 Operational Groups was sent overseas for service in north-western Europe and a depot to provide it with replacements was set up as part of the operational establishment of the Steventon Manor Unit of the Southern Regional Column.<sup>6</sup>

<sup>1</sup> H.S.R. 97/44, 7th September 1944; pp. 607–608.

<sup>2</sup> H.S.R. 101/44, 15th September 1944; p. 563 above.

<sup>3</sup> H.S.C. 116/44, 19th September 1944.

<sup>4</sup> H.S.C. 128/44, 20th October 1944.

<sup>5</sup> H.S.R. 107/44, 20th October 1944.

<sup>6</sup> H.S.R. 107/44, 20th October 1944. This Column rendered distinguished service, which it is not possible to describe here, in countering the 'V-weapon' attacks on Antwerp and elsewhere and training Allied military and civilian forces.

The Minister of Home Security decided in October that in the Bristol, Cardiff, Birmingham and Manchester Regions all local authority areas, except those where it was essential to be able to restore fire guard protection without delay, should be deprescribed under the Fire Guard Orders—the Regional Commissioner and local authorities fixing between them a convenient day for the coming into effect of the legal instruments.<sup>1</sup>

As a result of the releases and discharges from the civil defence services formal training may be said to have ceased by December and over much of the country Civil Defence was at a 'stand easy' stage. The sudden flying bomb attack on Lancashire served however, as a reminder of the importance of ensuring that the services, particularly the report and control centres, were kept in a state of operational efficiency.<sup>2</sup>

But this proved only a flash in the pan and the services continued to release members. The total whole-time paid staff, which at 30th September had been 217,742, was at 31st January 1945 down to 146,467, and it was planned that by 30th April there would be a further reduction to 125,520.

The first months of 1945 saw the departure of many of the 'captains and kings' of civil defence; by the end of March eight of the Regional Commissioners had resigned. Throughout these months a spate of circulars dealt with the release of premises; the fate of shelters, posts, depots, cleansing stations and administrative centres; the collection and disposal of vehicles, equipment and records; grants, gratuities, post-war credits and other financial matters.

On 26th April appeared a circular describing the action to be taken to wind up the war organisation of the Civil Defence General Services when the Government decided that this was no longer needed.<sup>3</sup> This included the disbandment of the Civil Defence Reserve, and Regions were urged to release members as soon as possible and to close down Regional Column unit headquarters with all possible speed.<sup>4</sup>

Almost immediately came the announcement that the 2nd May had been selected as the 'appointed day'. On this day new Orders came into operation revoking the greater part of the Civil Defence (Employment and Offences) Orders and transferring to the Minister concerned the powers conferred on the Regional Commissioners by those Orders which remained in force. On this day all anti-gas precautions were relaxed,<sup>5</sup> the arrangements for the provision and

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<sup>1</sup> H.S.R. 114/44, 17th November 1944.

<sup>2</sup> H.S.R. 2/45, 17th January 1945.

<sup>3</sup> H.S.C. 35/45, 26th April 1945.

<sup>4</sup> H.S.R. 18/45, 30th April 1945.

<sup>5</sup> H.S.C. 42/45, 30th April 1945.

maintenance of shelters were discontinued,<sup>1</sup> and all restrictions on every class of lighting throughout the country, except for some coastal areas, were removed.<sup>2</sup>

The many processes of winding up a war organisation of the size of civil defence could not, however, be done in a day. Though all whole-time personnel were given two months' notice to take effect on 1st July, some officers of the Civil Defence Reserve remained after this date to help in disbanding the Reserve, and in many Regions temporary staff had to be employed to help local authorities to deal with various matters, which included investigating and taking steps to deal with over 1,000 suspected unexploded missiles in all parts of the country.

On 15th May local authorities were asked to consider terminating the appointment of their Emergency Committees and A.R.P. Controllers as soon as the progress of winding up the civil defence organisation made their services redundant.<sup>3</sup> On 31st May those functions of the Minister of Home Security which it was desired to retain were transferred to the Secretary of State for Home Affairs, and the Ministry of Home Security ceased to exist.<sup>4</sup>

Throughout May ceremonial disbandment parades were held up and down the country, and finally on 10th June in Hyde Park a farewell parade of representatives of the civil defence services of all Regions was reviewed and addressed by King George VI.

His Majesty described the civil defence services as 'a great host of men and women of whom those present are but a fraction'. And he told those on parade that, 'the call of duty, the spirit of comradeship, the sense of high purpose are as necessary in the future as when the citizen armies of civil defence were gathered together'.<sup>5</sup>

All members of the civil defence services with three years' service or more were entitled to the Defence Medal. The ribbon of this, it may be added, was composed of green, intended to symbolise the green fields of Britain, orange, to suggest the flames of the blitz, and two black lines to recall the black-out.

Two months after His Majesty held this review the first atomic bomb used in warfare was dropped by Allied forces on Hiroshima. The modifications this event introduced into the plans and technique of passive defence are no concern of the present volume. It is sufficient to add that with the passage of the Civil Defence Act, 1948 the rebuilding of civil defence in Britain began once again.<sup>6</sup>

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<sup>1</sup> H.S.C. 43/45, 1st May 1945.

<sup>2</sup> H.S.C. 44/45, 1st May 1945.

<sup>3</sup> H.S.C. 55/45, 15th May 1945.

<sup>4</sup> H.S.C. 62/45, 31st May 1945; S.R. & O. 1945, No. 612. The post of Minister of Home Security was not formally abolished until 1st April 1946.

<sup>5</sup> *The Times*, 11th June 1945.

<sup>6</sup> 12 and 13 Geo. 6, Ch. 5.

# APPENDIX II

## Civilians killed and injured in Great Britain by enemy action 1939-1945

(Compiled by Ministry of Home Security from police and medical reports)

I.

	Killed			Admitted to Hospital (in most cases seriously injured)			Slightly Injured			Treated at First Aid Posts and Mobile First Aid Units (estimated one-fifth sent on to hospital) <sup>1</sup>
	London	Elsewhere	Totals	London	Elsewhere	Totals	London	Elsewhere	Totals	
3rd Sept. 1939-6th Sept. 1940 .	257	1,441	1,698	441	1,848	2,289	} 33,756	20,264	54,020	54,700
7th Sept. 1940-31st Dec. 1940 .	13,339	8,730	22,069	17,937	10,303	28,240		20,880	34,116	43,775
1941 . . . . .	6,487	13,431	19,918	7,641	13,524	21,165	63	7,097	7,160	8,719
1942 . . . . .	27	3,209	3,236	52	4,096	4,148	1,015	4,412	5,427	6,598
1943 . . . . .	542	1,830	2,372	989	2,461	3,450	33,212	6,343	39,555	41,116
1944 . . . . .	7,533	942	8,475	19,611	2,378	21,989	7,560	1,202	8,762	10,835
1st Jan. 1945-9th May 1945 .	1,705	155	1,860	3,836	387	4,223	—	1,793	1,793	—
Northern Ireland .	—	967	967	—	678	678	88,842	61,991	150,833	165,743
	29,890	30,705	60,595	50,507	35,675	86,182				

<sup>1</sup> Source: *Report of the Chief Medical Officer of the Ministry of Health 1939-1945*.

APPENDIX II (*contd.*)

2. The 146,777 civilians killed, missing believed killed or seriously injured can be sub-divided as follows:

Men: 67,661, Women: 63,221, Children under 16: 15,358, Unidentified: 537.

3. Civil defence workers on duty (the General Services and the Regular and Auxiliary Police and Fire Services) suffered 6,838 casualties (2,379 killed and 4,459 seriously injured), which are included in the previous total. Of these 6,220 were men, and 618 women.<sup>1</sup>

4. The proportions of casualties attributable to the enemy's chief weapons have been estimated as follows:

	Killed	Seriously Injured	Total
Bombs . . . . .	51,509	61,423	112,932
Flying bombs . . . . .	6,184	17,981	24,165
Long-range rockets . . . . .	2,754	6,523	9,277
Cross-Channel bombardment . . . . .	148	255	403
	60,595	86,182	146,777

5. The foregoing figures, derived from Home Security sources, need some explanation. More especially as they seem a striking example of the difficulties under the conditions of the Second World War of presenting human affairs (in this case the sombre affairs of death and serious injury) in accurate statistical form.

The Registrar-General's returns give the larger figure of 62,464 civilians killed in Great Britain by enemy action. But this, unlike the Home Security figure, includes the Home Guard (1,206 of whom died of wounds, injury or illness due to their service),

<sup>1</sup>Cmd. 6832 of 1946

APPENDIX II (*contd.*)

merchant seamen dying in Britain as a result of enemy action of any kind, and civilians killed by the enemy at sea. Neither figure is restricted to casualties caused directly by bombing; and the conclusions on the whole matter reached by Professor Titmuss (*Problems of Social Policy*, Appendix 8) deserve quotation:

The Home Security statistics do not include a proportion of the deaths of persons who were injured by enemy action and subsequently died. The Registrar-General's returns do, assuming that death certification gives precedence to the initial injury, and in so far as deaths occurred before the end of the German war. Then again, the former include civilians killed by cross-channel shelling, by machine-gunning from German aeroplanes, by exploding anti-aircraft shells and as a result of other defending action. But the Registrar-General's figures are wider in scope, for they include in addition civilian casualties caused by sea-mines, crashed Allied aircraft, Army manoeuvres and battle exercises, train and vehicle accidents caused by enemy action and other deaths due to operations of war.

Another reason for the difference between the figures is that death registration could not be carried out until identification was completed. In many instances, bodies—and parts of bodies—were not recovered for a long time, and identification was delayed for weeks or months. Where no remains were found, it was necessary to establish the fact that the missing person had been on the spot at the time of the 'incident' before registration could be effected and satisfactory evidence produced. All this meant delays before death registrations were made.

The injury statistics are likely to underestimate, rather than exaggerate, the number of civilians injured by war operations in general and air bombardment in particular. The chief reason would appear to be that an unknown number of seriously injured people (and some whose injuries were first thought to be slight but later were found to be serious), and a large number of slightly injured people, never went to a hospital or first-aid post and were consequently omitted from official records. In addition, numbers of first-aid posts were bombed and records destroyed, while in times of stress injuries were attended and not recorded. The distinction between seriously and slightly injured is somewhat thin, for the method of recording often varied from hospital to hospital, and by no means all hospital cases were, in reality, seriously injured. The figures must simply be accepted as showing the order of magnitude of casualty rates.

6. Professor Titmuss estimates the ratio of killed to all injured for the whole war at 1:3.9. Home Security data for a large number of towns during 1940-41 showed this to be usually between 1:3 and 1:4. In London Region alone it has been calculated at 1:3.6 during 1940-43, and 1:7 during the V-weapon attacks of 1944-45.

# APPENDIX III

## Estimated tonnages of bombs, flying-bombs and long-range rockets reported falling on the British Isles

	Bombs Excluding I.B.s & A.P.s	Flying-Bombs (War-head)	Long-Range Rockets (War-head)	Total (Metric Tons)
3rd September 1939 to 6th September 1940	34,970	—	—	34,970
7th September 1940 to 31st December 1940				
1941 . . . . .	22,176	—	—	22,176
1942 . . . . .	3,039	—	—	3,039
1943 . . . . .	2,232	—	—	2,232
1944 . . . . .	1,960	5,731	390	8,081
1st January 1945 to 8th May 1945 . . .	16	92	664	772
Total . . . . .	64,393 <sup>1</sup>	5,823 <sup>2</sup>	1,054 <sup>2</sup>	71,270

<sup>1</sup> Though the tonnages or numbers of incendiary bombs dropped in particular raids have sometimes been given in the text these were often in practice incalculable. No reliable total can therefore be given for these or for armour-piercing bombs.

<sup>2</sup> Since the war-heads of both flying-bombs and rockets were about one ton these figures are equivalent to the numbers reported to have fallen.

# APPENDIX IV

## Major night attacks on United Kingdom cities and towns from 7th September, 1940 to 16th May, 1941

<i>Target Area</i>	<i>Number of Major Attacks<sup>1</sup></i>	<i>Tonnages of H.E. Aimed</i>
London . . . . .	71	18,291
Liverpool-Birkenhead . . . . .	8	1,957
Birmingham . . . . .	8	1,852
Glasgow-Clydeside . . . . .	5	1,329
Plymouth-Devonport . . . . .	8	1,228
Bristol-Avonmouth . . . . .	6	919
Coventry . . . . .	2	818
Portsmouth . . . . .	3	687
Southampton . . . . .	4	647
Hull . . . . .	3	593
Manchester . . . . .	3	578
Belfast . . . . .	2	440
Sheffield . . . . .	1	355
Newcastle-Tyneside . . . . .	1	152
Nottingham . . . . .	1	137
Cardiff . . . . .	1	115

<sup>1</sup> The enemy's definition of a 'major attack', i.e. one in which 100 tons or more of high-explosive bombs were successfully aimed at the target, has been adopted for this table.

# APPENDIX V

## Total numbers of flying-bomb and long-range rocket incidents reported

*Table 1—By Counties*

Counties	Flying Bombs	Long-Range Rockets
London (Region) <sup>1</sup>	2,420	517
Kent . . . . .	1,444	64
Sussex . . . . .	886	4
Essex . . . . .	412	378
Surrey . . . . .	295	8
Suffolk . . . . .	93	13
Hertfordshire . . . . .	82	34
Hampshire . . . . .	80	—
Buckinghamshire . . . . .	27	2
Norfolk . . . . .	13	29
Berkshire . . . . .	12	1
Bedfordshire . . . . .	10	3
Lancashire . . . . .	8	—
Yorkshire . . . . .	7	—
Cheshire . . . . .	6	—
Cambridgeshire . . . . .	5	1
Northamptonshire . . . . .	4	—
Oxfordshire . . . . .	4	—
Isle of Ely . . . . .	3	—
Derbyshire . . . . .	3	—
Huntingdonshire . . . . .	2	—
Lincolnshire . . . . .	2	—
Durham . . . . .	1	—
Nottinghamshire . . . . .	1	—
Leicestershire . . . . .	1	—
Rutland . . . . .	1	—
Shropshire . . . . .	1	—
Total . . . . .	5,823 <sup>2</sup>	1,054 <sup>2</sup>

<sup>1</sup> London Region received 41 per cent. of flying-bombs, and 49 per cent. of long-range rockets.

<sup>2</sup> 271 of these flying-bombs and 4 of the long-range rockets fell in the sea.

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Coventry . . . . .	2	818
Portsmouth . . . . .	3	687
Southampton . . . . .	4	647
Hull . . . . .	3	593
Manchester . . . . .	3	578
Belfast . . . . .	2	440
Sheffield . . . . .	1	355
Newcastle-Tyneside . . . . .	1	152
Nottingham . . . . .	1	137
Cardiff . . . . .	1	115

<sup>1</sup> The enemy's definition of a 'major attack', i.e. one in which 100 tons or more of high-explosive bombs were successfully aimed at the target, has been adopted for this table.

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Suffolk . . . . .	93	13
Hertfordshire . . . . .	82	34
Hampshire . . . . .	80	—
Buckinghamshire . . . . .	27	2
Norfolk . . . . .	13	29
Berkshire . . . . .	12	1
Bedfordshire . . . . .	10	3
Lancashire . . . . .	8	—
Yorkshire . . . . .	7	—
Cheshire . . . . .	6	—
Cambridgeshire . . . . .	5	1
Northamptonshire . . . . .	4	—
Oxfordshire . . . . .	4	—
Isle of Ely . . . . .	3	—
Derbyshire . . . . .	3	—
Huntingdonshire . . . . .	2	—
Lincolnshire . . . . .	2	—
Durham . . . . .	1	—
Nottinghamshire . . . . .	1	—
Leicestershire . . . . .	1	—
Rutland . . . . .	1	—
Shropshire . . . . .	1	—
Total . . . . .	5,823 <sup>2</sup>	1,054 <sup>2</sup>

<sup>1</sup> London Region received 41 per cent. of flying-bombs, and 49 per cent. of long-range rockets.

<sup>2</sup> 271 of these flying-bombs and 4 of the long-range rockets fell in the sea.

APPENDIX V (*contd.*)*Table 2—By Months*

	Flying Bombs	Long-Range Rockets	Relevant Operations in North-West Europe
June 1944 . . .	1,435	—	Allies land in Normandy Cherbourg captured
July . . .	2,453	—	Caen captured
August . . .	1,450	—	Paris liberated
September . .	87	34	Brussels and Antwerp captured Boulogne captured
October . . .	131	91	Calais captured
November . .	101	144	Walcheren captured Flushing captured
December . .	74	121	Battle of the Ardennes
January 1945 . .	33	220	
February . . .	—	232	Belgium cleared of the enemy
March . . .	59	212	Allies cross River Rhine
	5,823	1,054	

## APPENDIX VI

### Attacks on London compared with those on Provincial Cities and Towns

FROM the beginning to the end of the war London was a target of the highest importance, and there is no question that in the event it was harder hit, measured both in number of attacks and number of casualties, than any other British city. Throughout the war it had 101 daylight attacks and 253 night attacks, a total of 354, by piloted aircraft. It was attacked at some time during the day or night, with the exception of only two twenty-four periods, for the whole of September, October and November 1940. London received 41 per cent. of the attacks by flying-bombs, and 49 per cent. of those by rockets. There were in all 1,224 alerts in Central London, an average of one every 36 hours.

Provincial cities and towns which suffered more than 50 attacks were:

		<i>Number of Attacks</i> ( <i>Cross-Channel shelling included</i> )		
		<i>Day</i>	<i>Night</i>	<i>Total</i>
1.	Dover . . . . .	76	49	125
2.	Great Yarmouth . . . . .	25	72	97
3.	Folkestone . . . . .	56	27	83
4.	Hull . . . . .	6	70	76
5.	Hastings . . . . .	54	21	75
6.	Lowestoft . . . . .	27	47	74
7.	Romford . . . . .	4	68	72
8.	Portsmouth . . . . .	15	57	72
9.	Plymouth . . . . .	13	58	71
10.	Margate . . . . .	30	40	70
11.	Liverpool . . . . .	—	68	68
12.	Southampton . . . . .	18	49	67
13.	Southend . . . . .	10	57	67
14.	Portland . . . . .	28	38	66
15.	Eastbourne . . . . .	39	27	66
16.	Ramsgate . . . . .	37	26	63
17.	Gillingham . . . . .	22	38	60
18.	Bristol . . . . .	5	51	56
19.	Birkenhead . . . . .	—	52	52
20.	Birmingham . . . . .	—	51	51

London suffered over 80,000 of the estimated total for the country of 146,777 fatal and serious casualties. Outside London, only Birmingham and Liverpool suffered more than 5,000 such casualties.

# APPENDIX VII

## Functions of Government Departments in post-raid work

The main subjects arising after heavy raids, and the division of responsibility for them, in England and Wales.

	Central Department	Regional representative	Local agent responsible for action
Welfare of homeless	Ministry of Health	Senior Regional Officer	Local authority
Evacuation	" " "	" " "	" "
Rehousing	" " "	" " "	" "
First aid repairs to houses	" " "	" " "	" "
Disposal of dead	" " "	" " "	" "
Repairs to sewers	" " "	" " "	" "
Casualty services, including hospitals	" " "	" " "	" "
Repairs to water undertakings	" " "	" " "	Local authority or undertaking
Civil defence services	Ministry of Home Security	Regional Commissioner and staff	Local authority
Clearance of debris	" " "	" " "	" "
Salvage of furniture	" " "	Regional Salvage Officer	" "
Military aid and disposal of U.X.B.s	Ministry of Home Security and Home Forces	Regional Commissioner	Military Commander
Law and order	Home Office	Regional Police Staff Officer	Chief Constable
Repairs to Roads	Ministry of Home Security and Ministry of Transport	Regional Commissioner and Divisional Road Engineer	Local authority
Traffic control	Ministry of Transport and Home Office	Regional Transport Commissioner and Regional Police Staff Officer	Chief Constable
Demands on transport (road and rail)	Ministry of Transport	Regional Transport Commissioner, and Railway Companies	—
	Ministry of Supply	Area Transportation Officer	—
	Other Departments	Regional representative	—
Communications	G.P.O.	Regional Director, G.P.O.	Local officials
	Ministry of Transport	Regional Transport Commissioner	—
	Ministry of Home Security	Senior Regional Officer	A.R.P. Controller
Emergency feeding arrangements	Ministry of Food	Divisional Food Officer	Local authority
Mobile canteens for civilians	" " "	" " "	—
Food salvage	" " "	" " "	Food Salvage Officer
Food shops	" " "	" " "	Food Executive Officer
Decontamination of foodstuffs (gas)	" " "	" " "	Local authority

APPENDIX VII (*contd.*)

	Central Department	Regional representative	Local agent responsible for action
Emergency tobacco supplies	Board of Trade (Tobacco Control)	Area representative	—
Relief of distress schemes	Assistance Board	Senior Regional representative	Area Officer
Claims for injuries, etc.	Assistance Board and Ministry of Pensions	Senior Regional representative and Chief Regional Officer	Local officials
Information to the public	Ministry of Information	Regional Information Officer	Emergency or local information officer
Repairs to war production factories	Emergency Services organisation	Area Officer, Ministry of Aircraft Production	Local Reconstruction Panel
Repairs to other factories	Board of Trade and Ministry of Works and Buildings	Area Officer and Assistant Director of Emergency Repairs	Area Officer and Assistant Director of Emergency Repairs
Repairs to shops other than food shops	Board of Trade and Ministry of Works and Buildings	—	—
Repairs to gas undertakings	Board of Trade	Regional Gas Engineering Adviser	Gas undertaking
Salvage of insured commodities	„ „ „	Insurance official	Owner of goods and assessor
Salvage of raw materials	Ministry of Supply	Area Officer	—
General services for emergency repair work and supplies	Ministry of Works	Assistant Director of Emergency Repairs	Emergency Works Officer
Labour supply and unemployment insurance	Ministry of Labour	Divisional Controller	Employment Exchange Manager
Petrol supplies	Petroleum Dept.	Divisional Petroleum Officer	—
Voluntary Social Services	Various Depts.	Officers of voluntary organisations	Officers of voluntary organisations

## APPENDIX VIII

### Civil Defence Reserve

1. Units were normally made up of three to five Operational Groups plus a Staff Group.

2. Each Operational Group consisted of 40 to 50 persons:

Four Civil Defence General Utility Parties each of 10 men, inclusive of Leader, Deputy Leader, and Driver. All the personnel including the driver were trained in Rescue, First Aid and Decontamination.

Two Despatch Rider Messengers, i.e., 1 to every 2 General Utility Parties. Ambulances, each with 1 driver and 1 attendant—also trained, as far as possible, in Rescue, First Aid and Decontamination, and in the driving of all the Unit's vehicles, especially the General Utility Party vehicles. Despatch Rider Messengers were also trained to perform telephone switchboard duties.

3. A Staff group comprised:

Commandant, Adjutant and Quartermaster, O.C. Training and Operations, Senior Group Officer and Chief Instructor, Group Officers (who also acted as Instructors), Instructors, Deputy Quartermaster, Matron, Driving Instructor, Stores Superintendent, Mechanics, Chief Clerk, Clerks, Shorthand typists or typists, Domestics. Variations within this framework were necessary according to the size of the Unit and to suit local circumstances.

# APPENDIX IX

## H.S.W.R. WAR DIARY

DATE: 11TH MAY 1941

REGION NO. 5

The following is a *selection* of messages received in Home Security War Room from London Region only during three hours of the attack on London of 11th May, 1941.

Time of origin	Form of message	In or out	Subject	Message No.
0036	Teleprinter	In	SOUTHWARK. H.E. Borough Road blocked. Mains damaged. WESTMINSTER 0004. H.E. Dolphin Square. No cas. LAMBETH 2325. H.E. Norwood Road blocked. BETHNAL GREEN 2350. H.E. Roman Road. Mains dam. ISLINGTON 2342. Heavy incendiary attack. H.E. at Stonefield Road. ST MARYLEBONE 2340. H.E. Wells Street. ST PANCRAS 2350. H.E. H.E. at HARROW and I.B.s at CAMBERWELL, TWICKENHAM, FELTHAM and HAMMERSMITH.	13
0040	"	"	POPLAR 2358. East India Dock No. 12. Half dock on fire.	14
0045	"	"	POPLAR 2359. South West India Dock Office wrecked by H.E.	15
0050	"	"	POPLAR 2359. Cootes Barge Road to right of S.W. India Dock entrance. 12 barges alight.	17
0055	"	"	STEPNEY 0020. Part of No. 9 warehouse boundary wall opposite No. 8 St Catherine Dock destroyed by H.E.	18
0055	"	"	WESTMINSTER. H.E. approx. 0027. Westminster Cathedral. Further details not yet available.	19
0102	"	"	HOLBORN report fire at British Museum, Gt Russell Street. No further details yet.	22
0116	"	"	CITY 0005. I.B.s on P.L.A. H.Q. Trinity Square. Fires extinguished. BETHNAL GREEN 2350. I.B.s. Fires. HAMMERSMITH 0018. 3 H.E. 20 casualties, including 18 trapped. WANDSWORTH 0015. 3 H.E. Wardens Post damaged. Casualties. LAMBETH 0005. H.E. 6 casualties. 0014. H.E. Westminster Bridge Road blocked. Bombing at CROYDON, BERMONDSEY, BARNET.	28
0145	"	"	WEST HAM 2350. No. 25-27 Sheds, Royal Albert Dock fired by incendiaries. Fairly extensive damage to export goods.	38
0158	"	"	SOUTHWARK. H.E. River wall bank, side near power station; river wall damaged. Tide now rising. Possibility of flooding.	46
0200	"	"	WESTMINSTER 0024. I.B. Children's Hospital, Vincent Sq., Fire.	47
0230	"	"	WESTMINSTER 0155. 3 H.E. Chambers of Houses of Parliament.	59
0232	"	"	ST PANCRAS 0010. 3 H.E. Charlotte St area. 10 casualties. ISLINGTON 0037.	61

## APPENDIX IX (contd)

Time of origin	Form of message	In or out	Subject	Message No.
			10 H.E. across borough. Property and mains dam. Many casualties. L.M.S. Railway Bridge at Corsica St dam. and in dangerous condition. No report of effect on Railway traffic yet.	
0241	"	"	POPLAR 0055. P.L.A. report H.E. on mine-sweeper H.M.S. <i>Goatfell</i> . Believed direct hit.	64
0247	"	"	POPLAR 0115. P.L.A. report owing to damage to impounding station, S.W. India Dock, all power including high tension off.	67
0244	Telephone Fire Control	"	20-Pump fire at Railway Goods Yard, Silverthorne Road, Clapham, WANDSWORTH. 60-Pump fire at Westminster Hall, WESTMINSTER.	70
0300	Teleprinter	"	BERMONDSEY from 2358 onwards. Heavy attack by H.E. and I.B.s especially in Rotherhithe area. Much damage to dwelling houses and business premises. Casualties unknown. CHISLEHURST 0106. H.E. Valliers Wood Road, casualties trapped. WESTMINSTER 0017. H.E. Bruton Street. Casualties. WANDSWORTH 0057-0123. 6 H.E. and many I.B.s. Damage to dwelling houses, flats and church. Casualties.	81
0325	"	"	H.M.S. <i>Tower</i> lying Cherry Garden Pier, BERMONDSEY, has received direct hit. Many casualties.	88
0326	"	"	ST PANCRAS. H.E. 0255. De Gaulle's Headquarters, Gordon St, 10 casualties, some trapped. Headquarters partly demolished.	89
0334	"	"	ST MARYLEBONE 0040. 3 H.E. Fire and damage. ST PANCRAS 0035. 13 H.E. Widespread damage. At least 60 casualties. PADDINGTON 0055. 2 H.E. Casualties trapped. LAMBETH 0040. 3 H.E. 18 casualties. Considerable damage.	93

# APPENDIX X

## Numbers employed in the Civil Defence and Police Services in World War II (Thousands)

	Whole-time										Part-time										Total of Whole-time and Part-time
	A.R.P. Services <sup>1</sup>		National Fire Service <sup>2</sup>		Casualty Services <sup>3</sup>		Regular Police		Auxiliary Police <sup>4</sup>		Total	A.R.P. Services <sup>1</sup>		National Fire Service <sup>2</sup>		Casualty Services <sup>3</sup>		Auxiliary Police <sup>5</sup>		Total	
	M	F	M	F	M	F	M	F	M	F		M	F	M	F	M	F	M	F		
1940 June	108.7	14.9	72.2	4.7	14.9	33.0	64.4	0.3	31.9	0.2	345.2	719.4	136.9	161.6	8.9	46.7	134.2	159.3	0.6	1,367.6	1,712.8
1941 "	110.1	16.8	96.8	5.4	14.5	36.0	64.4	0.4	38.2	0.3	382.9	759.2	148.3	159.4	10.0	47.2	122.2	156.2	0.7	1,403.2	1,786.1
1942 "	88.7	17.6	107.7	28.5	9.3	30.7	60.4	0.4	36.8	3.6	383.7	739.6	137.3	129.9	11.1	39.7	95.2	145.3	1.6	1,299.7	1,683.4
1943 "	66.5	11.7	93.8	30.7	7.1	21.8	51.6	0.4	34.1	5.0	322.7	773.4	167.1	214.8	47.0	47.5	116.6	145.0	1.9	1,513.3	1,836.0
1944 "	56.9	10.0	86.6	24.1	7.1	17.8	48.9	0.4	25.3	4.6	281.7	799.4	179.8	231.9	54.6	49.8	114.2	138.9	1.9	1,570.5	1,852.2
1945 "	—	—	46.2	10.6	—	—	46.8	0.4	18.6	4.0	126.6	—	—	102.9	25.2	—	—	103.6	1.3	233.0	359.6
PEAK STRENGTHS	112.3a	19.4b	108.6b	32.2c	15.2d	37.9e	64.5f	0.4g	39.5h	5.0c	407.7e	802.5i	179.8j	234.9i	54.6j	51.2d	137.0d	160.5d	2.0i	1,576.9i	1,869.1k

<sup>1</sup> Civil Defence (General) Services: wardens, rescue and first-aid parties, report and control centres, messengers.

<sup>2</sup> Until September 1941 regular fire brigades and Auxiliary Fire Service. Including Works Brigades.

<sup>3</sup> Emergency ambulance service and first-aid post service.

<sup>4</sup> Police War Reserve, First Police Reserve, Special Constables, and Women's Auxiliary Police Corps, but excluding civilian employees. From September 1941 the Police Auxiliary Messenger Service is included.

<sup>5</sup> Special Constables and Women's Auxiliary Police Corps, but excluding civilian employees. From September 1941 the Police Auxiliary Messenger Service is included. From September 1939 to September 1941 the figures relate to persons enrolled for employment.

	Date of Peak		Date of Peak		Date of Peak
a	December 1940	e	December 1941	i	March 1944
b	March 1942	f	March 1941	j	June 1944
c	March 1943	g	June 1941	k	December 1943
d	September 1940	h	September 1941		

# APPENDIX XI

## The Cost of Civil Defence, 1939–1946

### 1. *Public Civil Defence Services*

(a) borne on Central Funds    £928,305,000 (96%)

(b) borne on Local Funds    £40,125,000 (4%)

£968,430,000

### 2. *Other Services (Industry and Commerce)*

(a) borne on Central Funds    £25,765,000 (44%)

(b) borne by Industry and  
Commerce    .    .    £32,366,000 (56%)

£58,131,000

Grand Total    £1,026,561,000

*Note*—These figures are a reasonable approximation of the cost of Civil Defence for the seven financial years 1939/40 to 1945/46 inclusive.

APPENDIX XI (*contd.*)

## ANALYSIS OF EXPENDITURE

1. *Public Civil Defence Services (including Emergency Fire Brigade Services)*

	Expenditure borne on Central Funds	Expenditure of Local Authorities eligible for grant aid (Average rate 75%)
	<i>Thousands £</i>	
Civil Defence Schools . . . . .	356	—
Research, etc. . . . .	1,474	—
Civil Defence Equipment and Materials . . . . .	76,007	—
Respirator Factories, Storage, Inspection . . . . .	3,056	—
Vehicle Repairs, etc. . . . .	212	—
Evacuation and Miscellaneous (Home Office) . . . . .	58	—
Protective Services . . . . .	2,718	—
Evacuation (Ministry of Health) net . . . . .	126,331	—
Casualties and Disease (Ministry of Health) net . . . . .	138,786	—
Local Authorities' claims for Civil Defence expenditure	275,769	144,708
Local Authorities' claims for Auxiliary Fire Service expenditure:		
Grant aided services . . . . .	—	15,793
Pay and allowances . . . . .	22,216	—
Other expenditure . . . . .	800	—
National Fire Service: . . . . .		
Pay and allowances . . . . .	106,112	—
Other expenditure . . . . .	46,750	—
Fire-fighting Appliances and Equipment (A.F.S. and N.F.S.) . . . . .	15,712	—
Civil Defence Gratuities and Post-War Credits . . . . .	11,177	—
	827,534	160,501
Less Receipts . . . . .	19,605	—
	807,929	—
75% grant on 160,501 . . . . .	+ 120,376	— 120,376
Centrally borne . . . . .	928,305	Locally borne 40,125

2. *Other Services (Industry and Commerce)**Thousands £*

Shelters in Factories, Mines, Commercial Buildings, etc. . . . .

(a) 22,000 (Grant at 35%)

Anti-Glare and Camouflage . . . . .

12,263

Protection of Vital Services . . . . .

23,868

(b) 36,131 (Grant at 50%)

Total (a) and (b) 58,131